

# The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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**NOTICES.**—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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## The Vetoed Agreement

At the eleventh hour Mr. Sidney Webb announced in the House of Commons that the Board of the British Dyestuffs Corporation had been informed that the Government would feel compelled to exercise their power of veto with respect to an agreement between the B.D.C. and the Interessen Gemeinschaft on the lines suggested. Why the Government's decision should have been delayed up to this stage is not precisely known, but probably it was due to some internal division of opinion and to the scantiness of their direct knowledge of the interests involved. Taking all the circumstances into account, any other decision could hardly have been expected, and for the moment the issue may be considered settled. The controversy on the subject has not helped the industry, for it has revealed a division of interests among the British manufacturers themselves. This, in our view, is the most serious feature of the situation, and must continue to give anxiety to all who wish well to the British industry, and wish, especially from the national point of view, to see it developing as a great unified interest.

In face of the decision of the Government the speech

by Dr. Levinstein, referred to last week, possesses an additionally direct interest. Dr. Levinstein has not, of course, asked for the resignation of the Board, or that any body of shareholders should take action in this direction. His position may perhaps best be described as having assumed, as a matter of course, that the directors would take the action indicated at the annual meeting if they were not supported respecting the agreement, and that this course would be welcomed by the colour users, on account of their disapproval of the agreement and their wish for a general reorganisation. Further, he sought to show that such a step would not be harmful to those with a financial interest in the company. Dr. Levinstein's concern for the future of the industry is very natural, on public and entirely impersonal grounds. He has spent his life, as his father did, in establishing it, and is admittedly one of our first authorities on the science and technology, as well as on the commercial, side of the industry.

The entire industry, we are sure, shares Dr. Levinstein's desire to see the business of dyestuff production, so largely represented by the B.D.C., placed in a permanently secure position, and is as free in this matter from any mere personal considerations as he is himself. The vital problem, however, is one of practical policy. What is to be done to produce the good results for the industry which everyone desires? The answer to this question must be reduced to working terms, and it is just at this point that the suggestions for reform stop short.

## Cutting Down Fuel Costs

A COMMUNICATION which we have just received from that most active of departments, the United States Bureau of Mines, takes our mind back some eighteen months when in these columns we drew attention to the lack of recognition on the part of the average fuel consumer of the amount of quite useable combustible matter which is, perhaps rather thoughtlessly, consigned to the ashes dump. The heading—"Money from Ashes"—which we gave to remarks seemed for a while to become something in the nature of a slogan, and in response to a number of requests for further information we published at a later date a particularly informative article by Dr. H. A. Prager, who had been in close touch with some of the magnetic separation processes which seem definitely to have established themselves on the Continent. In this country, too, we have not been slow to grasp the advantages and economies attached to the recovery of combustible matter from ashes and waste fuels, but for many years we seem to have been rather wedded to wet processes

so that existing commitments in the way of plant have tended to stand in the way of any rapid development of the undoubtedly preferable practice of treating the material in a dry state. From what one can gather, however, the principle of dry magnetic separation of combustible from inert constituents is making progress in this country—a fact which may in some measure be attributed to that post-war school of thought which steadfastly refuses to recognise that such things as waste products exist in any shape or form, and that the term is merely a colloquial misnomer.

It is not so often in these days that one can turn to examples where American methods lag behind European practice, but in the Bureau of Mines report referred to above there is a distinct admonition to American fuel engineers that they have almost universally neglected the waste which occurs from discarding unconsumed combustible refuse, this in spite of the fact that the realisation that fuel costs are likely to remain permanently higher has prompted fuel consumers to apply every effort towards improving the fuel economy of their plants. It must, of course, be borne in mind that the actual loss which occurs by way of the ashes varies between extremely wide limits, depending on the quality of the coal, the type of plant and the firing practice. In general, the higher the ash content of the coal the greater will be the amount of combustible appearing in the refuse. In actual operating practice the amount of unconsumed combustible matter in the boiler refuse may range from a few per cent. to as high as 40 or 50 per cent. In an informal statement one well-known American engineer estimates that the average amount of combustible matter in the refuse from a large stoker-fired central station boiler plant is about 15 or 20 per cent. Assuming that the coal burned contains 12 per cent. of ash, and allowing for flue dust losses, approximately 2 per cent. of the coal will be lost through this channel. The engineer of another large modern power plant reported that when burning coal of about the same ash content the average amount of combustible in the refuse was in the neighbourhood of 33 per cent. entailing a loss of approximately 4 per cent. of the heating value of the fuel fired. Where the coal used daily runs into hundreds of tons, an appreciable economy could be effected by recovering this percentage. In conclusion, it is as well for those who are considering the process to bear in mind that the magnetic system has a distinct advantage over wet methods in that it is not necessary to size the crushed raw material, nor is there any loss of fines as sludge. Again, the combustible product recovered is delivered dry, thus avoiding the losses and inconvenience due to handling a fuel containing possibly 25 per cent. of moisture.

It should not be overlooked, however, that magnetic separation is not the only available method which operates on the dry principle. Recently one has heard a good deal of some of the purely mechanical dry systems which have originated in America. These systems seem primarily to have been introduced for the treatment of coal and the removal of inert matter therefrom, but in all probability they would be applicable to the treatment of ash materials.

### The Hydrogenation of Coal

CHEMISTS and fuel technologists in this country have always followed up with rather more than ordinary interest the experimental work which Dr. Bergius has for some years now been conducting in connection with the production of liquid products from coal by the process of hydrogenation. It was just over ten years ago that Bergius applied for a patent in which was set out what, at that time, were somewhat startling claims; and, although this first patent has been followed by numerous others and by an exceptional amount of investigatory work on the part of the inventor and his co-workers, one cannot be altogether satisfied that the process has reached anything more than a large experimental scale or that it has definitely exhibited the saving grace of being commercially feasible. Nevertheless, from the scientific standpoint it is remarkably attractive, and further interest was lent to the whole matter by the paper which Dr. A. E. Dunstan contributed to the Institution of Petroleum Technologists last week. Attention was primarily given by the author to the more practicable process introduced by Bergius in connection with the hydrogenation of oils, and, perhaps, there can be no better testimony to the manner in which ordinary cracking processes have advanced in recent years than the contention of Dr. Ormandy that there now seemed to be little room for "Berginisation."

Whatever may be the position as regards the oil process, however, no one seems as yet to have come forward to challenge the utility of the coal process, although the reason for this may be that the method has not yet developed sufficiently along practicable lines to warrant its being seriously reckoned with. In France, and particularly at the Paris Municipal Laboratory, a good deal of attention seems to have been given to Bergius' claims, and the French workers have found that the process takes place very much in the same way as when oils are dealt with. They have also corroborated the fact that only coal which has a carbon content of less than 85 per cent. is amenable to "Berginisation," and that the presence of sulphur in the coal is a considerable stumbling-block to success, although the difficulty might probably be surmounted by the addition of iron or calcium oxides. Naturally the translation of the experimental process to the technical scale is faced with some formidable difficulties, but there has been some talk of a commercial plant having been erected at Mannheim, and further particulars of any prolonged working of this plant will naturally be awaited with a good deal of curiosity.

### Chemical Industry Club

THE past year, according to the annual report of the executive committee, has not been marked by any events of exceptional importance, but the Club, it is satisfactory to hear, has continued to fulfil the objects for which it was founded, and evidence is accumulating that it is becoming better known and more popular among members of the chemical industry and profession. The Club premises have been more frequented of late, and in spite of the continued lag in most branches of the chemical industry the number of effective

members has increased from 687 to 708. The fact that 85 new members have been elected during the year shows that active recruiting is going on, but the leakage continues rather serious, there being no fewer than 66 untraced resignations. The financial position, it is stated, has improved considerably, owing largely to the Secretary's success in securing the prompt payment of subscriptions, and the premises have just been re-decorated at a cost of about £140. The accounts show an actual surplus on the year's working of £244, which strikes us as distinctly good, considering the comparatively low membership fee, and that the Club owes its success solely to its members, and is independent of all other sources. The annual meeting of the club is fixed for October 27, and the annual dinner (in conjunction with the Society of Chemical Industry) for November 14.

### Germany and French Chemical Industry

THE official opinion of the French chemical industry, as expressed in the journal of la Société de Chimie Industrielle, *Chimie et Industrie*, on the London agreement is that it will react unfavourably on the French industry, particularly the dyestuffs section. The statement of a German industrialist is quoted as showing the opinion of the Germans of French chemistry, and foreshadowing intense commercial competition with the French. Chemistry, it is alleged, finds its most fertile soil in Germany, and the French copying of the German dyes is ridiculed by the suggestion that when the Germans can produce Bordeaux wines equal to the French, the French will be able to produce dyes equal to the German. An appeal is made in the same journal for French chemical concerns to work together and develop the scope of la Société de Chimie Industrielle.

### Fundamental Research

THE only fault we can find with the introductory report which the National Union of Scientific Workers has just issued "On the Encouragement of Fundamental Research," is that it reads a little like a very excellent sermon. This is no faint praise, as the cynic might hastily assume, for we have perused more portentous volumes on the same subject which fall perceptibly short of even a good pulpit style. Here the spirit of research is discussed and expounded on a high plane, and a touch of the iconoclast is disclosed in the suggestion to sweep away all such base temptations as patents, prizes, special grants, and payment by results, and instead, simply to find the best men to give them security and proper salaries, and to use the results for the common benefit. The report asks for money in aid of publication and suggests the co-ordination of the work of the seventy scientific societies now responsible for it. It certainly does seem rather a lot for the job. The report is published at 6d., and anyone who likes a smooth, spacious treatment of the subject will not regret the outlay.

### Points from Our News Pages

- Letters are printed from Professor James C. Philip; Mr. Alex Hill, and Geo. W. Paton (p. 392).  
The second of Mr. W. J. U. Woolcock's presidential addresses deals with "Publicity in Chemical Industry" (p. 393).  
The Board of Trade returns for September show notable increases in certain imports, but a decrease in exports is also recorded (p. 394).  
Dr. H. H. Morgan's presidential address to the Oil and Colour Chemists' Association is concerned with paint and varnish specifications (p. 395).  
The London market report reveals an improvement in export business, and the anticipated set-back from the political situation has not been felt (p. 403).  
Our Scottish report shows some improvement in the heavy chemical market and a fair amount of home and export inquiry. (p. 406).

### Books Received

- A SYSTEMATIC HANDBOOK OF VOLUMETRIC ANALYSIS. By Francis Sutton. London: J. and A. Churchill. Pp. 630. 35/-.  
A SYSTEM OF PHYSICAL CHEMISTRY. Vol. III—Quantum Theory. By William C. McC. Lewis. London: Longmans, Green and Co. Pp. 408. 15s.

### The Calendar

Oct. 20	Ludwig Mond Lecture: "Life and Work of Dr. Ludwig Mond." Professor H. B. Dixon.	Chemistry Theatre, Manchester University.
20	Birmingham Rotary Club: "Producers versus Consumers." Sir Ernest J. P. Benn. 1 p.m.	Queen's Hotel, Birmingham.
21	Hull Chemical and Engineering Society: "The Thermal Efficiency of Internal Combustion Engines." Mr. G. E. Scholes. 7.45 p.m.	Hull Photographic Society's Rooms, Grey Street, Park Street, Hull.
22	Faraday Society, Geological Society, and the Mineralogical Society: General Discussion on "The Physical Chemistry of Igneous Rock Formation." 3 p.m.	Burlington House, Piccadilly, London.
22	Institute of Chemistry (Manchester Section): Annual General Meeting and paper on "Service Agreements—Duties and Privileges." Mr. G. S. Marlow.	Manchester
23	Institution of Welding Engineers: "Steel Wire: Its Manufacture, Properties, and Uses for Welding and Other Purposes." Mr. E. A. Atkins. 8 p.m.	Engineers' Club, Coventry Street, London, W.1.
23	Society of Dyers and Colourists (West Riding Section): "The Research Situation—a Criterion of National Stability." Dr. H. H. Hodgson.	Bradford.
23	Chemical Engineering Group: "Crystallisation," by Mr. Hugh Griffiths "The Development and Formation of Crystals," by Professor T. V. Barker. 5 p.m.	Engineers' Club, 39, Coventry Street, London, W.1
24	Junior Institution of Engineers: "Powdered Fuel." Mr. F. F. Evans. 7.30 p.m.	39, Victoria Street, London, S.W.1.
24	West Cumberland Society of Chemists and Engineers: "The Oil Engine." Eng.-Commander C. J. Hawkes. 7 p.m.	Workington.
24	University of London: "Water Supply and Its Purification"—Lecture III. Prof. S. L. Rashkovitch. 5.30 p.m.	University College, Gower Street, London.
25	British Association of Chemists: 7th Annual Dinner. 6.30 p.m.	Engineers' Club, Coventry Street, London
27	Chemical Industry Club: Annual General Meeting.	2, Whitehall Court, London



## Organisation of Chemical Societies

To the Editor of THE CHEMICAL AGE.

SIR,—As one who has some direct knowledge of the affairs of the Chemical Society, I should like to reply to the letter from Dr. M. W. Travers, which appeared in your issue of October 11. Dr. Travers has presented a singularly one-sided statement of the position, for in his endeavour to prove that the societies give an inadequate return for the subscriptions received, he omits essential points which any fair-minded man would take into consideration before reaching a verdict on that charge.

In the first place Dr. Travers criticises adversely the decision to make an extra charge for the Chemical Society's *Annual Reports*, since in his view students to whom this publication particularly appeals, will be thereby discouraged from joining the Society. He omits to mention, what is equally relevant, that, for the present, new Fellows are not required to pay the entrance fee of £3—a financial alleviation which has been introduced mainly to meet the case of the young chemist, and which ought in fairness to be set against the new charge for the *Annual Reports*. The necessity of paying £3 in addition to the first annual subscription has, quite naturally, prevented many students and junior chemists from joining the Society.

Then the Chemical Society's Library, with the upkeep and development of which all the leading chemical organisations are now associated, is put out of court by Dr. Travers because it is not "in any way comparable with the Patent Office Library." Against this unwarranted and contemptuous reference to the Library of the Chemical Society I should like to put the fact that since the opportunities for using the library were extended some years ago the annual number of readers has increased from between two and three thousand to between six and seven thousand, and it is rising steadily. Further, the Patent Office Library, however useful to Londoners, cannot serve chemists who reside in the provinces, whereas a large proportion of the books and journals in the Chemical Society Library can be borrowed, either directly or through the post. The extent of the availability of the Chemical Society Library is not generally realised.

As to abstracts, it is, of course, well known that the American publication covers a much wider area than the two sections of the British abstracts combined, but that is not necessarily an unmixed advantage. Against the narrower scope of the British publications, however, it is only right to set the fact that abstracts appear there more promptly than in *Chemical Abstracts*. Some papers, more particularly those from American sources, are reported earlier in *Chemical Abstracts*, but the majority are abstracted first in the British publications. The more prompt appearance of the British abstracts is a valuable feature which deserves to be emphasised.

Those who give time and thought to the affairs of the chemical societies are, in my opinion, far from cherishing the belief, which your leading article appears to attribute to them, that nothing could be much better than it is. In connection with abstracts, for example, the desirability of improvement and co-ordination is recognised, and I would invite Dr. Travers (or any other critics) to submit to us any really constructive suggestions, not in the spirit of his letter but in the spirit of co-operation. As Chairman of the Bureau of Abstracts, I guarantee that any such practical suggestion will receive fair consideration.—Yours, etc.,

JAMES C. PHILIP.

Imperial College, S.W.7.

## Royal Commercial Travellers' Schools

To the Editor of THE CHEMICAL AGE.

SIR,—I should feel greatly obliged if you would kindly lend the aid of your valuable columns to draw the attention of your readers, particularly those engaged in the commercial world, to the good work which is being carried on from year to year by these schools.

They are supported entirely by voluntary contributions which are received mainly from commercial houses and their travellers, but the committee of management feel that the extent and variety of the trades interested is not sufficiently well known in the commercial world of to-day, and it is my special work at the present time, as president of the 79th

Festival, to do what I can to make this old and worthy institution better known.

These schools, which were established at Wanstead in 1847 and eight years later at Pinner, for the orphan and necessitous children of commercial travellers, have continued every year to expand and develop their work and interests to meet modern requirements, and to-day they stand in the front rank of institutions of their kind.

At the present time there are very nearly 400 boys and girls in the schools of whom 80 are war orphans, these latter being received immediately they reach the age at which they can enter the schools. The annual cost of maintaining the children is approximately £29,000, of which £22,000 must come from voluntary sources. About 50 per cent. of the current expenses are met by the contributions of commercial travellers, and there is no doubt that if more "commercial" realised the value of the work done and would subscribe even only a guinea a year, the schools would be able to carry on and develop their activities without constant need of limiting their efforts.

The Board of Management is comprised mainly of heads of firms whose names are household words in the commercial world. Mr. Howard Williams is the chairman, Sir Jeremiah Colman, Bart, Sir Charles C. Wakefield, Bart., and the Hon. Geoffrey Hope Morley are the trustees: the secretary of the schools, by whom any information will be gladly given, is Mr. W. P. Lees, 17, Cheapside, E.C.2.—Yours, etc.,

GEO. W. PATON,

Chairman and Managing Director of  
Bryant and May, Ltd.

## Universities Bureau

To the Editor of THE CHEMICAL AGE.

SIR,—At the Conference of Universities of Great Britain and Ireland, held in 1922, Mr. H. A. L. Fisher, then President of the Board of Education, drew attention to the necessity of the observance by universities of a policy of co-operation and division of labour in respect of fields or work which lie outside the usual undergraduate curricula, especially those fields of pure and applied science in which the pursuit of new knowledge involves heavy expenditure on laboratory equipment. The universities, mindful of this principle, the application of which is facilitated by the quarterly meetings of their executive heads as a Standing Committee, have recently approved of the publication of a summary account of post graduation courses and specialist studies for the session 1924-25. This pamphlet, of which a copy is enclosed, is obtainable from the Universities Bureau of the British Empire, 50, Russell Square, W.C.1.—Yours, etc.,

ALEX. HILL,  
Secretary.

50, Russell Square, London, W.C.1.  
October 10.

## A Correction

To the Editor of THE CHEMICAL AGE.

SIR,—In your issue of October 11, page 377, we notice a paragraph "arsenic poisoning," which refers to the death of a late employee of ours, Richard Kaye.

It is not for us to question where you obtained the details given, but it is a mistake to state that he was discharged as unfit for work. Kaye was only a temporary hand and fully understood this when he was engaged. In the report of the inquest, October 3, which report was fully given in the *Warrington Guardian* of October 4, the police surgeon, Dr. Bowden, who conducted the post mortem, said the cause of death was chronic degeneration of both kidneys and œdema and congestion of both lungs; that there was no trace of arsenical poisoning, and that the surprising thing was that Kaye had lived as long as he had. The degeneration must have taken months.

Kaye was only engaged by us as a temporary hand on June 18, and left us on September 5. We shall be glad if you will in a future issue report as to the cause of death.

Yours, etc.,

TOMLINSON & HAYWARD, LTD.  
H. C. WILSON.



## Publicity in Chemical Industry

Sound Advice by Mr. Woolcock

THE second of Mr. Woolcock's presidential addresses was delivered before the Nottingham Section of the Society of Chemical Industry on Wednesday, October 8, and dealt with the subject of "Publicity in Chemical Industry."

The growth in the practice of publicity in this country, Mr. Woolcock said, has been so gradual that we have hardly noticed it. It is only when we look back over a number of years that we realise what an enormous development has taken place and how it has affected every phase of our daily life. Every man, every firm, every association or society lives on its reputation. The society loses its members if it loses its reputation for doing good work. The firm loses business as soon as its customers think it of poor repute. The man makes no progress in his work unless he has the reputation for doing it well. Publicity is the agency which makes reputation. Hence its importance in every industry, and in particular in chemical industry.

I like to think of the days when there were no newspaper advertisements and no shop windows; when the merchant and the tradesman were entirely dependent on the word-of-mouth recommendation of their customers, and when their personal reputations were made by the publicity which came from street corner or tavern conversations. Then came the daring fellow who removed the discreet perforated zinc window blind which hid his goods from the vulgar gaze, and boldly placed his goods in the shop window. He was inevitably considered a low person, but he possessed the essential factor to success in publicity, that is, enthusiasm.

I want to stress this point particularly, because in the joint enterprise in which you and I are engaged of building up our Society we have to remember three things:—(1) The Society's existence depends on its reputation; (2) unless we give publicity to its work we cannot build up its reputation; (3) enthusiasm for the work of the Society and enthusiasm in giving it publicity is essential to our success. But let us return to the enthusiast who started the shop-window publicity. I imagine that, as soon as his example was followed, he thought of the possibility of an advertisement in a newspaper, and I have with me some reproductions of old copies of *The Times* which were printed at Wembley, and which give some idea of the restrained tone of the advertisements.

### The Value of Advertisements

Later in development came the displayed advertisement, with a carefully written-up article in the text of the paper. About the same time the use of the correspondence columns developed. At one time the letters to the editor expressed the feelings of the readers of the paper. Righteous indignation against the Government—any Government—protests against oppression in all its forms, suggestions for the better conduct of every department of public life. In fact, nothing but genuine expressions of feelings which could not be kept under. The advertiser to some extent gauged the popularity of a paper by the amount in its correspondence columns. This led to the stimulation of these columns, sometimes, I fear, by letters written by friends of the staff. Then came the beginning of publicity as we know it to-day; the realisation that "publicity" was "reputation," and that no cause could hope to obtain adherents, no industry could ultimately prosper, unless in the eyes of the public it had reputation. This required a much more specialised treatment. The letter to the editor and the plain advertisement fell into disrepute and in their places came the use of "News" items. Let me illustrate what I mean by a wholly fictitious case. Suppose a branch of the industry is devoted to the manufacture of what I will call methauin products, and the production has reached a stage where the proprietors either want more capital or they want protection against foreign competition, or to increase their sales. We shall find all sorts of little paragraphs appearing as to the firm producing it. A wedding in the family of the proprietor will be recorded. A dinner of the directors and staff or an outing of the workpeople is written up—always with the name of the product well to the fore. An accident outside the works can always be utilised as "News." In other words, a steady flow of news keeps the product before the general public. The art of poster publicity is now

developed to an extraordinary and sometimes beautiful extent. I show one of the posters connected with the Exhibition. This brings me to the publicity of an industry in contradistinction to that of a firm. We have now realised that much can be done for individual firms in an industry by developing the public reputation of the industry itself.

A few years ago, if you had casually touched a man on the shoulder and said one word, "Chemicals," to him and then asked him what was the first word that came into his mind he would have said "Germany." It has been my ambition to change that and so arrange the publicity of the industry that the reputation of the industry should be in everybody's mind. To this end there have been wireless talks, which, as you know, cannot be used for advertising any particular article or firm, but can tell the people something about an industry. Then we had two films which will be shown you in a minute. These films were not designed for such an audience as this, but for the public, and they are being shown in cinematograph theatres all over the country.

### Exhibition Possibilities

I now turn to the last method I shall mention of building up the reputation of an industry, that of exhibitions, and I shall refer to three types. In the first type I instance an exhibition for the lay mind. When the Safeguarding of Industries Bill was before the House of Commons I found that a large number of my colleagues had but little knowledge of the substances which were dealt with in the Schedule of the Act. We, therefore, arranged an exhibition of fine chemicals and their everyday applications. The exhibition was not open to the public, but we allowed the Press to visit it. Its scope of usefulness was limited but it achieved exactly what we aimed at.

The second type of exhibition is to be found in the British Industries Fair. It is a purely trade exhibition, designed to attract buyers of chemicals. This does not necessitate a very attractive display, nor is it necessary to interpret the technical features, because those who visit it are themselves familiar with the class of goods displayed. Its range of publicity is limited.

The British Empire Exhibition, however, furnishes an excellent example of the third type of exhibition at which, although exhibitors hope to receive business inquiries or even to make sales, they realise that in the main they are spending their money on publicity. It is interesting to note how much good publicity is made by all small items. A fact, for example, that the Chemical Hall at Wembley occupies 40,000 square feet and not 37,000 square feet has been an advantage. It is the largest of the Sections in the Palace of Industry, and because of being slightly larger than several other Sections is always mentioned first. The fact that it is entered by a gate that is called the Alchemist Gate is a trifle which has brought a good deal of publicity.

That the Section has been prolific in good stories has also had its effect. One concerning an innocent German who insisted on keeping his hat in one hand during the time he was allowed to hold a bottle of Perkin's Mauvein in the other has provided excellent copy. An accident at one of the stalls not only provided more copy but gave us a coat of blue paint on the roof and added to the comfort of the Section during the short spell of warm weather which we had early in the year. One Sunday when the sun's rays were breaking through the glass roof of the Chemical Hall a large glass-covered dish which was reputed to contain two million tuberculous bacilli burst with the heat. A mere hint to the Press representatives as to the possible effect of this accident was sufficient to secure a coat of blue paint which nothing else was able to do. I might add that the glass dish was only supposed to contain the germs.

The Chemical Section at Wembley, as I have stated, was designed to attract the notice of the public, and some millions of people have been through the Chemical Hall. The Scientific Section had a more limited appeal. Before a number of the public could be attracted to this part of the Chemical Hall there had to be some desire on the part of the visitor to know something about science, but it was a revela-

tion to the organisers of this Section how interested very large numbers of the general public were in everything connected with science. Having satisfied that interest, it was quite easy to dispose of about 10,000 pamphlets following the different branches of science and written in popular language. The total cost of the Chemical Hall was rather over £100,000, roughly about 0.05 per cent. of the amount invested in chemical industry in this country.

The effect of all this work, almost imperceptible in its development, is very marked when the position of the science and industry in the public mind to-day is compared with that of 20 years ago. I am aware of the confusion which exists between "Pharmacists" and "Chemists"; that is not a matter of great public controversy at the moment, but still raises a smile at public dinners. Leaving this on one side, one could say without fear of contradiction that the general public to-day is proud of its British chemical industry, and has begun to know and appreciate something of the work of its scientific chemists. I want to enlist the assistance of the branches of the Society in making still more widely known the work of its members.

#### Candidates from the Chemical Industry

NOMINATIONS for the General Election on October 29 include the following names connected with the chemical industry:—

Mr. H. C. Hogbin (L.), Battersea North; Col. K. Vaughan-Morgan (U.), Fulham East; Mr. E. Brotherton-Ratcliffe (L.), Islington South; Major R. W. Barnett (U.), St. Pancras South-West; Mr. T. Miller-Jones (U.), Limehouse; Sir Sydney Henn (U.), Blackburn; Major A. G. Church (Lab.), Leyton East; Mr. F. J. M. Brunner (L.), Manchester, Hulme; Lt.-Com. F. W. Astbury (U.), Salford West; Sir John Brunner (L.), Southport; Dr. J. F. Crowley (L.), Warrington; Sir R. B. Bird (U.), Wolverhampton West; Sir W. Alexander (U.), Glasgow Central; Mr. H. Mond (L.), Isle of Ely; Sir F. B. Sanderson (U.), Lancaster, Darwen; Sir Thomas Robinson (L.), Lancaster, Stretford; Dr. G. C. Clayton (U.), Lancaster, Widnes; Sir A. Mond (L.), Carmarthen.

#### "Why Not to Vote Labour"

READERS OF THE CHEMICAL AGE will no doubt be interested to know that the series of articles by Sir Ernest J. P. Benn which appeared in the early summer is being reprinted, after revision, as a popular priced pamphlet. The articles deal with a number of common economic and business "fallacies." A perusal of these indicates that there is more than a little virtue in the present capitalistic system, which is not so black as it is painted by the Socialist theorist, who might do well to study the pamphlet. The publication has happily coincided with the present general election, and the title, "Why Not to Vote Labour: the Business Implications of Socialism," has appropriately been applied. The publishers are Jarrolds, Ltd., 10 and 11, Warwick Lane, London, and copies are available at 1s. each.

#### A New Local Chemical Society

THE Leicester Literary and Philosophical Society has inaugurated a chemical section. The opening meeting was held on Wednesday at the Museum, New Walk, Leicester, when Professor H. E. Armstrong spoke on "The Spirit of Science." Other meetings arranged this year include papers by Mr. S. F. Burford, F.I.C., the Leicester City Analyst, on "Water Supply," on November 12, and Dr. T. Slater Price, F.R.S., on "The Action of Light on the Photographic Plate," on December 3. The acting secretary is Mr. A. S. Wood, M.Sc., F.I.C., 10, De Montfort Street, Leicester, to whom all inquiries should be addressed.

#### Makers of Dust Masks

A SCOTTISH Paper Co. desire to obtain dust masks for use by labourers who remove flue dust, etc., from their boiler furnaces during week-ends. The masks should have inlet and exhaust respiratory vents, the inlet vent being fitted with a suitable filter, and a full view window of mica. The mask should completely cover the head of the wearer. It is essential that the article should be odourless, as the heat retained in the furnace is liable to produce a nauseating effect. The name of the inquiring firm can be obtained on application to THE CHEMICAL AGE, 8, Bouverie Street, London, E.C.

## Chemical Trade Returns for September

### Increased Imports and Decline in Exports

THE total value of chemicals, dyes, drugs and colours imported during September was £1,317,012, this being £36,000 more than in August, and £293,460 than last year in September. Exports were valued at £1,897,455, which represents a decrease of £117,949, compared with August, and £443,003 compared with September, 1923.

Notable increases in imports are recorded for bleaching materials, borax, red and orange lead, sodium nitrate (wiping out the deficit last month), and alizarine dyestuffs. The decrease in exports has been evenly distributed, but is most notable in the case of the coal tar crudes. The only important class which has not suffered is that of sodium compounds.

### Imports for September

INCREASES			
		1924	1923
Acid, acetic .....	cwt.	962	475
Acid, tartaric .....	"	1,324	915
Bleaching materials .....	"	5,922	3,997
Borax .....	"	22,977	3,878
Calcium carbide .....	"	65,892	65,526
Red lead and orange lead .....	"	4,145	1,891
Nickel oxide .....	"	2,236	1,500
Sodium nitrate .....	"	365,637	91,408
Sodium compounds, except nitrate ..	"	19,962	16,661
Cream of tartar .....	"	3,494	2,912
Zinc oxide .....	tons	790	522
Intermediate coal tar products, including aniline oil and salt, and phenol glycine .....	cwt.	1	nil
Alizarine dyestuffs .....	"	568	171
Unspecified coal tar dyestuffs .....	"	3,107	2,807
Barytes, including blanc fixe .....	"	65,626	52,900
Turpentine .....	"	57,080	49,203
DECREASES			
Crude glycerin .....	cwt.	94	6,750
Distilled glycerin .....	"	33	152
Potassium nitrate .....	"	5,768	27,119
Potassium compounds, except nitrate ..	"	174,487	251,714
Synthetic indigo .....	"	nil	nil
Natural indigo .....	"	nil	74
White lead .....	"	7,189	7,574
Unspecified painters' materials .....	"	59,099	70,192
Mercury .....	lb.	22,720	24,660
Essential oils, except turpentine ..	"	310,040	373,923

### Exports for September

INCREASES			
		1924	1923
Unspecified coal tar products .....	cwt.	29,714	22,405
Copper sulphate .....	"	216	116
Distilled glycerin .....	"	12,936	8,195
Potassium nitrate .....	"	1,645	882
Sodium carbonate, etc. ....	"	479,986	473,801
Caustic soda .....	"	128,314	116,180
Sodium chromate and bichromate ..	"	1,972	1,927
Sodium sulphate, including saltcake ..	"	208,394	157,456
Barytes, including blanc fixe .....	"	5,222	4,735
DECREASES			
Acid, sulphuric .....	cwt.	2,530	2,983
Acid, tartaric .....	"	1,747	2,003
Ammonium chloride .....	tons	241	402
Ammonium sulphate .....	"	23,225	23,858
Anthracene .....	cwt.	nil	1,000
Benzol and toluol .....	galls.	117,641	142,603
Carbolic acid .....	cwt.	5,484	12,656
Naphtha .....	galls.	6,862	14,583
Naphthalene .....	cwt.	909	18,122
Tar oil, creosote, etc. ....	galls.	2,513,000	4,580,427
Crude glycerin .....	cwt.	1,842	17,724
Potassium chromate and bichromate ..	"	1,961	3,604
Unspecified potassium compounds ..	"	917	3,171
Unspecified sodium compounds .....	"	36,973	50,719
Zinc oxide .....	tons	145	247
Coal tar dyestuffs .....	cwt.	8,438	14,313
Dyestuffs other than coal tar .....	"	6,953	7,020
White lead .....	"	14,396	16,944
Paints and colours, ground .....	"	34,024	34,251
Paints and enamels, prepared .....	"	30,934	31,536
Unspecified painters' materials .....	"	43,806	61,856

## Paint and Varnish Specifications

### Dr. H. H. Morgan before the Oil and Colour Chemists

At the first meeting of the session of the Oil and Colour Chemists' Association (with which is now incorporated the Paint and Varnish Society) on Thursday, October 9, Dr. H. H. Morgan read his presidential address, in which he discussed the question of the preparation and value of paint and varnish specifications.

It had been stated by persons, whose opinions were worthy of every consideration, that specifications were a trap to the unwary, a hindrance to good products coming forward and a handicap and a bar to progress, and that, because of specifications, manufacturers were ruthlessly prevented from tendering for an article vastly superior to that specified. This view, however, was diametrically opposed to the opinions of others and at first sight a deadlock would appear to be inevitable. At the same time the differences of opinion were really due to the different interpretations given to the meaning of the word "specification." It was certain, of course, that specifications could be drawn up which were a handicap and would be worse than nothing at all; at the same time it did not follow that it was impossible to draw up a specification which was better than nothing. The real things that needed standardising in paints and varnishes were the properties and methods of trial or testing, in order that any two persons might be able to agree that any particular paint or varnish was what it was intended to be and, under certain conditions, behaved as it was supposed to behave. This gave the manufacturer scope to get the desired qualities how he would and provided him with an incentive for research and the development of new processes and raw materials.

### Names do Not Determine Composition

It was surprising how many people regarded the names of materials such as brunswick green, prussian blue, copal varnish, shellac varnish, etc., as defining not only the composition of the material, but also its properties, general behaviour and utility. In most cases, however, names had such a wide meaning that the cost of a brunswick green varnish paint, for example, might vary by two or three hundred per cent. and its protective value might be a question of a few weeks or many years. It was with the idea of giving such names a more precise or a more restricted meaning that the British Engineering Standards Association Committee on Paints and Varnishes was working, and never before had such a comprehensive and authoritative body of people lent their aid in this matter. The existence and use of specifications describing the desired paint or varnish in the fewest words, so clearly and completely that no inferior stuff could be sold under any particular title or description, not only safeguarded the consumer, but established confidence in the manufacturer. This in turn led to a demand from users for fewer types of paints and varnishes, so that the manufacturer, having a smaller number of products to make, pack, stock, etc., was able to reduce his cost of production and increase the efficiency.

It was necessary to consider how such a specification should be drawn up. The consumer required a paint for a particular purpose, but at present there was neither sufficient mutual understanding nor satisfactory commercial guarantee implied in such terms as "front-door varnish" or "gas-holder paint." Whether or not the consumer desired a paint to be of a stated composition, his requirements as regards colour, spreading capacity, ease of application, flow, gloss, opacity and durability under certain conditions should certainly be known and specified. The problem of producing such a product must next be considered on the manufacturing side from the scientific, technical, and economic points of view. Finally, the consumer had to consider ways and means of testing the delivered goods to see that they conformed to his requirements.

This latter was one of the great stumbling-blocks, whilst very inferior qualities might readily be detected, it was frequently very difficult, and at times almost impossible, to differentiate between paints or varnishes of medium quality and those of high quality. It was often contended that the testing of a paint or varnish was best left to the skilled craftsman. At the same time there were reasons why the testing of paint should not be done by a person who was only a chemist, because the chemist was so often prone to assume that properties depend only upon the chemical compositions as

ordinarily determined and was frequently not fully alive to the limits of the analytical methods he used. The chemical composition alone did not define the quality or usefulness of a paint or varnish, and we must look for some method of testing which may either supplement or replace that of chemical analysis. The properties which had to be decided were spreading capacity, ease of application, flow and time of drying, together with the colour, gloss, opacity and durability of the dried film. Instruments and mechanical devices had been suggested and tried from time to time in order to measure each one of the above properties, but none as yet can be said to have found much favour. There was need for more organised trials and more team work in this direction.

### Need for Research on Durability

The all-important problem of specifying and testing what was known as durability of a paint or varnish was at present little short of chaotic. The durability of any paint could only be known as the result of accumulated experiences of various kinds extending over many years. In the case of what were known as straight linseed oil paints there was a definite and well-known relationship between the service of such a paint and its determinable chemical and physical properties, but for more generally useful information exhaustive tests must be made on all sorts of structural materials, on various undercoats—old and new—applied by craftsmen of varying abilities and under different climatic conditions, exposed at various periods of the year and in different geographical positions. To guarantee that a paint when applied to anything, anyhow, anywhere, by anybody, will yield a good, durable coating was a gamble, with the odds against the manufacturer. There were two distinct ways of attacking this problem. The first was known as "accelerated durability tests" or "artificial weathering tests," but whilst the results obtained were frequently very useful to the investigator, they could not be said to give accurate information in predicting the service value of a paint or varnish whose history was unknown. The second method was to tabulate in so far as they are at present known to us a complete list of the properties of the paint and of the dried film, upon which the durability of the paint depended, and then to investigate quantitatively the relationship between these factors and durability. Various laboratory tests have been proposed from time to time for this purpose, but they had all been carried out at some arbitrarily fixed stage in the life of the film. The flexibility, hardness, tensile strength and water absorption of a paint or varnish film, however, were continuously altering, and it was the rate of change which was intimately related to the durability of a film than the absolute value at any arbitrarily fixed stage. It was to be feared that much time must elapse before the value of a paint could be predicted with any degree of confidence from the determination of these properties alone. Unfortunately, there was no research association connected with the industry; was it not possible to induce our universities and technical colleges to help?

### A Debt of Empire

UNDER this appropriate heading we have received from Captain Ian Fraser, the ninth annual report of St. Dunstan's, that admirably managed institution for the training and life care of men blinded in the War. The figures reveal the remarkable fact that no less than nine-tenths of the income of this unique foundation has to be raised by appeals to the public. The comprehensive survey of the activities and results of the past year serves to accentuate the undoubted debt of Empire. Captain Ian Fraser, at St. Dunstan's Headquarters, Regent's Park, London, N.W.1, would be grateful for any help.

### Sources of Molybdenite

A SUBSCRIBER inquires as to the market requirements, value in money, average ore percentages and sources of molybdenite. We understand that all the above information is contained in the following two volumes, published by the Imperial Mineral Resources Bureau, 2, Queen Anne's Gate, Buildings, London, S.W.1: *Mineral Industry of the British Empire (War Period), 1913-1919*; *Molybdenum*. Price 1s. 6d. *Statistics—Molybdenum, 1919-1924*. Price 6d. Both these publications, we are informed, can be obtained from H.M. Stationery Office.



## Clarification and Dehydration of Liquids

### Some Applications of the Sharples Super-Centrifuge

*We give below one or two typical examples of complex separations which could only be carried out with extreme difficulty until the scientific application of centrifugal force in simple, high speed apparatus rendered them processes of practical value.*

ALTHOUGH the results desired in filtration and centrifuging are often similar the limitations are not alike. The filter press accomplishes the removal of solids by passing a liquid through a medium which will not permit the passage of solids. As the removal of solids progresses a cake is built up, which hinders the separation. In centrifugal clarification the liquid passes through no obstructing medium. Solids are removed virtually by subsidence and are deposited out of the path of the clear

fibre broad, caustic mercerising solutions, concentrated sodium and potassium hydroxides, and zinc chloride plating baths are clarified. The standard bowls of the Super-Centrifuge are constructed of steel, bronze or Monel metal. For use in the clarification of certain strong acid solutions, the Monel metal bowl and accessory parts of suitably resistant metals or alloys compose an ideal apparatus. Where weak fruit and vegetable acids are present it is often sufficient to have the bowl copper-plated to withstand their corrosive effects.

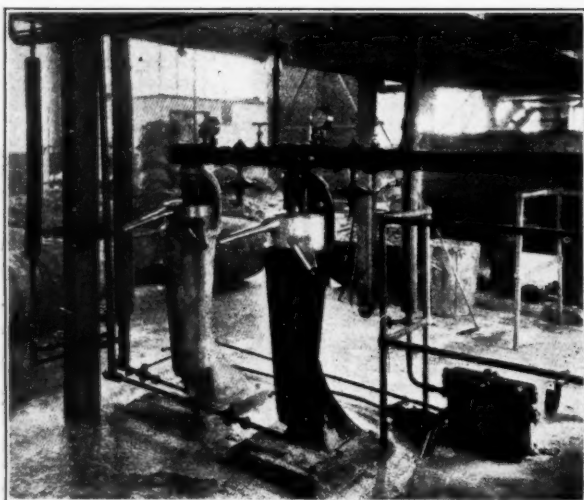
#### Dehydration of Oils and Fats

Another important function which may be very conveniently carried out by the Sharples Super-Centrifuge is that of dehydration of oils and fats. Requirements in dehydration vary considerably, thus the water-gas tar manufacturer is usually satisfied with 5 per cent. of residual water, but the British Electrical Standards Association's specification for transformer oil requires the removal of the minutest traces of water. The Super-Centrifuge can satisfy both these requirements efficiently.

The presence of small amounts of water with impurities seems to have an almost catalytic effect on the deterioration of many oils. The result is the production of free fatty acids in the oil, giving rise to rancid flavour and often accompanied by undesirable bacterial changes. The dehydration of butter oil is typical and similar technique may be used with fish liver oil, herring oil, linseed oil, castor oil, tallow, wool grease, and cocoa butter. Butter oil containing over 11 per cent. moisture does not keep well unless preserved. Butter oil separated from butter or cream may be dehydrated below the required limit with a Super-Centrifuge operating at 100 to 125 gallons per hour. The resulting fat may be sealed in cans and kept indefinitely. The 100 per cent. butter fat so produced commands a considerable premium and its preparation is very profitable.

#### Transformer Oil

Oils for electrical transformers were formerly purified by filtering through presses equipped with 70 to 100 sheets of blotting paper. This paper was very carefully dried before use and carefully handled to avoid picking up moisture. The oil was filtered several times and every 30 minutes the blotting



SHARPLES INSTALLATION FOR DEHYDRATING AND CLARIFYING ANIMAL FATS (DRYSDALE MANUFACTURING CO., LTD., GREENFORD, MIDDLESEX).

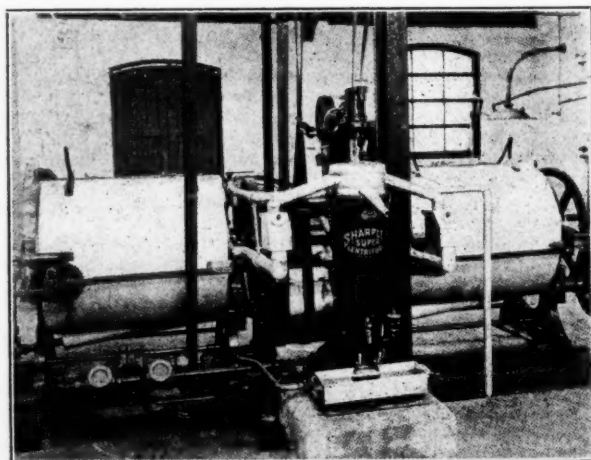
liquid. A gelatinous solid will usually clog the filter very quickly. In a centrifugal machine such a solid separates more quickly because of its gelatinous nature. In this way the Sharples Super-Centrifuge has been found particularly suitable for the clarification of viscous materials, such as varnish, solutions of gums and gelatinous products, shellac, lacquers and thick syrupy liquids, and has found wide applications in the industries handling these products.

In the case of lacquers the suspended matter consists of fine cotton fibres. Most lacquers are extremely viscous and frequently several months settling is required before a clear liquid is obtained. Filtration is exceedingly slow. There is so little solid in the liquid that a cake is built with difficulty and clarity is only obtained by repressing the liquid several times or by adding inert material to form a cake in the filter. Lacquers are also so volatile that it is impracticable to heat them to reduce viscosity. A Sharples Super-Centrifuge is capable of delivering a perfectly clear lacquer at 60 to 75 gallons per hour. In addition, owing to its simple construction, loss of lacquer through cleaning the plant is very small.

#### Application to Artificial Silk

The clarification of cuprammonium cellulose, an intermediate stage in the cuprammonium process for making artificial silk, resembles the process for lacquers. It is essential to remove a fine, insoluble material that would cause weak spots in the finished silk. The solution is viscous and difficult to handle by filtering, or subsidence under gravity, and in addition the solution itself exerts a solvent action on most filter cloths. The Sharples Super-Centrifuge, owing to its simple construction, can be made of non-corrosive materials very readily, so that has proved a successful solution of the difficulties in this process.

In this respect the appliance readily lends itself to the handling of many corrosive materials difficult to filter. For instance, 70° Baumé solutions of zinc chloride used in manufacturing



CONTINUOUS FLOW BENZENE CLARIFICATION PLANT AT CARLISLE DYE WORKS.

paper was changed. By means of the Sharples Super-Centrifuge it is possible to deliver oil well up to the required specification at rates of 250 to 400 gallons per hour.

#### Dehydration of Water-Gas Tar

Before the introduction of the centrifuge for the dehydration of water-gas tar, a mixture of tar and water accumulated in the

gas holder. Gravity separation made possible the recovery of some dry tar and free water, but between the tar and water layers there accumulated an emulsion which in time filled the holder. It was of no value to anyone as it was neither burnable nor saleable. The Super-Centrifuge solved the problem effectually however. Tar may be fed direct from the holder to the centrifuge at 100 to 400 gallons per hour, depending on the nature of the emulsion and the requirements of the finished product. There is no accumulation of emulsion, and the tar is run direct to storage, while the water may be passed out to the waste lines without causing pollution of streams or clogging of sewers. The tar has a good market value in the paint, chemical and building trades.

#### Lanoline Manufacturers' Winding Up Order

UNDER a Winding-up Order made against C.V.O. Chemical Works (1919), Ltd., of 29, Friar Lane, Leicester, on July 15, creditors' petition, the statutory meetings of the creditors and the shareholders were held on Tuesday last at the Board of Trade Offices, 33, Carey Street, London.

The Official Receiver, who presided, said the company was incorporated as a private company in April, 1919, with a nominal capital of £30,000. Its business was to manufacture lanoline and similar products. It was a reconstruction of a former company of the same name which had been formed in 1918 with a nominal capital of £3,000. It was arranged that the present company should take over the assets and undertaking of the old concern in consideration of discharging the then outstanding liabilities, and the costs of the reconstruction, and of allotting a specified number of shares to the shareholders of the old concern. The issued capital was £24,428. The business had been unprofitable; the company was always short of working capital, and had been hampered by taking over the liabilities of the old company.

The trading loss was chiefly attributed to foreign competition, the market for lanoline having declined throughout, while prices of raw material remained high. The accounts for the first year ended April 17, 1920, showed a gross profit of £563 and a net loss of £4,725, while the accounts for the following twelve months disclosed a gross profit of £252 and a net loss of £5,564. In 1920 the company tried to arrange with competitors for the stabilisation of the market price of lanoline, but the trading results did not improve.

According to a statement that had been filed, the gross liabilities amounted to £13,416, and the assets were valued at £95. The meetings passed a resolution for the appointment of Mr. H. V. Watson, accountant (secretary to the company), 29, Friar Lane, Leicester, as liquidator.

#### Norwegian Nitrogen Industry

THE Norwegian production of synthetic nitrates is likely to be considerably increased in the near future. At present negotiations are in progress between the Royal Department for Public Works and the Norsk Hydro-Elektrisk Kvaestofaktieselskap, the latter on certain conditions offering to buy the power of a Government water-power plant at Glomfjord with a capacity of 100,000 horse-power, for the purpose of manufacturing calcium nitrate by the Birkeland-Eyde process. Notwithstanding the competition of the German synthetic ammonia industry, the nitrate market is now rather favourable. If this new plant is built the production will be increased by approximately 40,000 tons of nitrate a year, being now about 100,000 tons.

At present, states the Scandinavian correspondent of *Industrial and Engineering Chemistry*, the production of pyrites in Scandinavia is very low. Not a single mine can be worked profitably. The cause is not so much the competition of the Spanish pyrites as the new methods employed in the sulphur mines of Texas, making the sulphur quite as cheap as pyrites for use in the sulphuric acid industry. In a recent article in *Teknisk Ukeblad*, a mining engineer, Kirsebom, points to the new possibility appearing through the development of the so-called Eustis process, which aims to produce electrolytic iron from the pyrites, from which an eventual copper content is separated by a new efficient flotation process, and sulphur is obtained as a by-product. With a possible production of 1,000,000 tons a year of pyrites, nearly 300,000 tons of iron and 400,000 tons of sulphur can be produced in this way.

### Centenary of the Franklin Institute

#### Message from the Faraday Society

THE Franklin Institute in Philadelphia celebrated its centenary in September, when three days were devoted to addresses and other meetings. Among those who attended the celebrations was Sir Robert Robertson, who presented the greetings of the Faraday Society, which were in the following words, according to *Industrial and Engineering Chemistry* :—

"The Faraday Society, by the hand of its president, sends greetings to the Franklin Institute and offers its most cordial congratulations on the occasion of the centenary celebrations of the foundation of the Institute in 1824.

"The association of the great name of Franklin with your Institute inevitably invites comparison with the great name of Faraday which is attached to this Society. There is much that is common to the work of these two investigators in the domain of electrical science; the work of the one complements that of the other so completely that the science may almost be said to rest on the twin foundation laid by these two men. It was Franklin who conceived electricity to consist of 'particles extremely supple, since it can permeate common matter, even the densest metals, with such ease and freedom as not to receive any perceptible resistance.' This brilliant speculation—the famous one-fluid theory of electricity—has in our day received abundant confirmation in the modern electronic theory of electricity, a theory that owes its origin to, and in a logical deduction from, the discovery by Faraday of ions and of the laws of electrolysis. Thus the work of Faraday is linked up across the years and across the seas with the name of Franklin, and in the consciousness of this bond of union the Faraday Society pays its tribute to the splendid part which the Franklin Institute has played in maintaining the tradition of the illustrious man of science whose name it bears, by disseminating a knowledge of physical and natural laws in the United States of America and in encouraging their application to increase the well-being and comfort of mankind.

"May the Franklin Institute long continue its beneficent work!"

#### Institution of Chemical Engineers

At a meeting of the Council of the Institution, held on Wednesday, October 8, the following were elected :—

*Members*.—Messrs. A. M. O'Brien, W. T. Gardner, S. J. Tungay and H. T. Fradley. *Associate Members*.—Messrs. A. J. Underwood and W. P. Paddison. *Graduates*.—Messrs. L. G. Cowen, H. O. Richardson and F. Estill. *Students*.—Messrs. R. G. Heggie and M. Schmulian.

Arrangements were discussed for entertaining the members of the American Institute of Chemical Engineers who contemplate holding a joint annual meeting with the Institution of Chemical Engineers in England in July next year. The programme proposed is as follows :—

Sunday, July 5.—Arrive Liverpool.  
Monday, July 6.—Chester.  
Tuesday, July 7.—Chester.  
Wednesday, July 8.—Chester.  
Thursday, July 9.—The Lakes.  
Friday, July 10.—The Lakes.  
Saturday, July 11.—Glasgow.  
Sunday, July 12.—Edinburgh.  
Monday, July 13.—Edinburgh.  
Tuesday, July 14. } Leeds: Annual meeting of Society  
Wednesday, July 15. } of Chemical Industry.

The visitors are to leave on July 18 for America. It is proposed that the tour be made by cars and an organising committee has been formed to arrange details.

#### The Magadi Soda Lake

Six months ago the affairs of the Magadi Soda Co. were placed in the hands of a receiver, but the shareholders have now received an offer from Brunner, Mond and Co. to take over the Soda Lake in Kenya Colony and work it in conjunction with their British alkali interests, leaving them a substantial holding in capital of a reorganised company. This offer, when accepted by the shareholders, who meet on October 17, will mean the continued exploitation of the Magadi soda, which has an important bearing on scores of British industries. Lake Magadi, which covers an area of 30 square miles, contains the purest quantity of natural soda in the world, and as it is replenished by hot springs the supply is inexhaustible.



## From Week to Week

CONSIDERABLE DAMAGE was done by fire at the warehouse of Messrs. Courtaulds, Ltd., at Leicester on Saturday, October 11.

MR. J. E. FRAZER, of Winchester and Balliol College, Oxford, has been appointed lecturer in chemistry at Balliol College.

"BEFORE FIVE YEARS HAVE ELAPSED artificial petroleum will be competing with natural petroleum," says M. Daniel Berthelot, in an interview.

THE DYERS' COMPANY elected Mr. William Wood Leuchars, Prime Warden, and Dr. George Ernest Peachell, Renter Warden, at the annual meeting on Wednesday, October 8.

DR. E. F. ARMSTRONG addressed the New York Section of the American Chemical Society at the Chemists' Club, New York, yesterday (Friday). His subject was "The Fats from Many Aspects."

POISON GAS for disinfecting skins suspected of harbouring anthrax spores has been discussed by representatives of the League of Nations and the International Labour Office, at Geneva, and the question is to be investigated.

MR. ERNEST F. CANNING, of the firm of W. Canning, Ltd., chemical merchants and manufacturers and engineers, etc., was, on Friday, October 10, appointed chairman of the Motor and Cycle Trades Benevolent Fund (Birmingham Centre).

PROFESSOR BALY, of Liverpool University, has been asked to stay in the United States for a tour, giving his lecture upon the reproduction of sugar from organic matter, and special leave of absence to enable him to accept has been granted by Liverpool University.

MR. THOMAS HARRISON, of West Hartlepool, a chemist at the works of Brunner, Mond and Co., when motor cycling at Wolviston on Sunday last collided with a car belonging to Mr. T. Levy, pharmaceutical chemist, of West Hartlepool, and sustained severe injuries to his foot.

DR. A. C. LANGMUIR, as representative of the United States Shellac Importers' Association, is now in England for the purpose of conferring with the London Shellac Association regarding shellac standards, methods of analysis, and other matters of importance to United States and British shellac traders.

REPORTS STATE THAT one of the best known petroleum technologists in England is proceeding to Germany shortly to report on the Mutol oil refining process on behalf of the new interests who are negotiating with the Anglo-Scottish Finance Corporation, Ltd., for the purchase of the rights for Great Britain with a view to establishing an extensive plant in this country.

JUDGMENT WAS RESERVED in the case before Mr. Justice Tomlin in the Chancery Division on Thursday, October 16, brought by Dr. Meyer Wilderman against F. W. Berk and Co., Ltd., who, it was alleged, had infringed the plaintiff's patent for an improvement to an electrolytic cell by importing and selling caustic potash which had apparently been made by his process.

MR. J. H. THOMAS, speaking at an Advertising Convention dinner on Wednesday, said that though there might be a deficit of £1,000,000 on the Wembley exhibition, when the time came to defend that in the House of Commons he would not do it on the sordid ground of pounds, shillings and pence. The benefit would be revealed in years to come, and the money would prove to have been well spent.

DR. G. D. LIVEING, the oldest member of Cambridge University, and the first professor of chemistry there, was knocked down in the street at Cambridge on Saturday, October 11, by a woman cyclist, and was taken home suffering from an injury to his thigh and from shock. Dr. Liveing, who is nearly 97, is president of St. John's College, and has been a Fellow of that college for seventy-one years.

THE SIXTIETH ANNIVERSARY of the establishment of the L. M. and S. Railway Chemical Laboratory at Crewe (the first railway chemical laboratory in the country) was celebrated by the staff (past and present) at a dinner held at Crewe on October 10. Captain Beames, M.Inst.C.E., the principal guest, and Dr. Lewis-Dale, who was in the chair, spoke of the initiative of the old L. and N.W. Railway in recognising as early as 1864 the importance of the application of chemical science to industry.

THE SUGAR REFINING PLANT of Rowntree's Cocoa Works, York, was extensively damaged by fire on Tuesday last.

THE ANNUAL DINNER of the Nottingham section of the Society of Chemical Industry was held at Nottingham on Saturday last.

THE DUNLOP RUBBER COMPANY'S DIRECTORS have accepted the resignation of Mr. L. M. Bergin, managing director, as from December 31.

TWO STUDENTSHIPS of £120 each for two years in obichemistry, have been awarded by Cambridge University to Mr. W. W. Grave and Mr. P. A. Taylor.

EMMANUEL COLLEGE, CAMBRIDGE, has awarded a Studentship of £150 for two years to Mr. George Adam Reay, of Aberdeen University, for research in bio-chemistry.

AMONG THE PAPERS submitted at the meeting of the Chemical Society on Thursday was one by Dr. R. Lessing and Mr. M. A. L. Banks, on the "Influence of Catalysts on Carbonisation."

ACCOUNTS HAVE BEEN FILED under the liquidation of the United Laboratories and Chemical Co., Ltd., of 97, Victoria Street, London, showing liabilities of £8,405 and assets valued at £173.

WITH REFERENCE TO THE NEGOTIATIONS proceeding between the firm of B. Laporte, Ltd., and their chemical workers, we understand that a full statement on the subject will shortly be issued by the firm, setting forth the points under discussion.

SIR EDWARD ALLEN BROTHERTON has been appointed chairman of the Cassel Cyanide Co., in succession to the late Sir George Beilby. Mr. Thomas Ewan, for many years chief chemist to the company, has been elected to the vacant seat on the board.

DR. F. W. ASTON, of the Cavendish Laboratory, Cambridge, addressing the Swiss National Congress of Scientists at Lucerne on "Atoms and Isotopes," traced the development of the subject from the first theories of Dalton and Prout down to the recent discoveries at Cambridge.

BETWEEN FIFTY AND SIXTY MEMBERS of the Anglo-Norse, Anglo-Finnish and Anglo-Swedish Societies in London were the guests of Lever Brothers, Ltd., at Port Sunlight on Wednesday, October 15. They included the Norwegian and Finnish Ministers and the Consul-General of Sweden.

MR. J. STANLEY ROY, general sales manager for British Glues and Chemicals, Ltd., Imperial House, Kingsway, has relinquished his position with that company to rejoin Messrs. Fox, Roy and Co., Ltd. (Plymouth, London, Bristol, and Liverpool) at their London office, 70, Gracechurch Street, E.C.3, and will be one of the London directors.

THE DEATH IS ANNOUNCED of Mr. E. J. Rawlings, who, as travelling-mechanic for L. Oertling, Ltd., manufacturers of balances and weights, of Turfmill Street, London, was associated with many laboratory chemists throughout the country. Mr. Rawlings, whose death indirectly resulted from exposure during the war, was in his thirty-ninth year.

OUR AMERICAN CONTEMPORARY, *Chemical Age*, of New York, states that Sir Max Muspratt, whose presence in the States is at once a compliment to the attainments of chemistry in that country and a stimulus to the aspirations of their chemists, has a background of practical experience in social service unique among men who have distinguished themselves as chemists. As former Lord Mayor of Liverpool he has in his own country the distinction that is incident to the occupancy of the mayoralty of Chicago. As chairman of the United Alkali Co. he ranks among the business leaders of a nation of business men.

AN EFFORT WAS MADE RECENTLY to form a Paint and Varnish Institute among the members of the Paint and Varnish Institute and the Oil and Colour Chemists' Association. After considerable negotiation the matter fell through and the two bodies have now amalgamated. Mr. H. D. Bradford, the honorary secretary, has done much work in connection with the amalgamation as well as in the efforts to form an institute. In recognition of his services a complimentary dinner was given and a presentation made at the Holborn Restaurant, London, on Friday, October 17. Mr. J. Cruikshank Smith, the first president of the Society, occupied the chair.



# References to Current Literature

## British

- HYDROGENATION.**—Hydrogenation by the Bergius method. H. I. Waterman and J. N. J. Perquin. *J. Inst. Petroleum Tech.*, September, 1924, pp. 670-677.
- ABSORBENTS.**—Fuller's earth and its application to the petroleum industry. A. Rauch and G. E. Pain. *J. Inst. Petroleum Tech.*, September, 1924, pp. 687-694.
- OILS.**—Reports on the progress of naphthology during 1923. Cracking. R. Pitkethly and A. E. Dunstan. *J. Inst. Petroleum Tech.*, September, 1924, pp. 631-640.
- COAL.**—A study of the destructive distillation of coal. E. V. Evans. *J. Roy. Soc. Arts.*; Part I, September 26, 1924, pp. 767-782; Part II, October 3, 1924, pp. 785-801.
- COMBUSTION.**—The ignition of gases. Part IV. Ignition by a heated surface. Mixtures of the paraffins with air. W. Mason and R. V. Wheeler. *Chem. Soc. Trans.*, September, 1924, pp. 1869-1875.
- The influence of nitrogen dilution on the speed of flame. Part II. O. C. de C. Ellis and S. R. Stubbs. *Chem. Soc. Trans.*, September, 1924, pp. 1960-1963.
- SULPHURATION.**—Direct sulphuration of aniline. H. H. Hodgson. *Chem. Soc. Trans.*, September, 1924, pp. 1855-1858.
- ALKALOIDS.**—Strychnine and brucine. Part II. G. R. Clemo, W. H. Perkin, jun., and R. Robinson. *Chem. Soc. Trans.*, September, 1924, pp. 1751-1804.
- ELECTRO-CHEMISTRY.**—Electrometric studies on azo- and hydrazo-compounds. E. Büllmann and J. H. Blom. *Chem. Soc. Trans.*, September, 1924, pp. 1719-1731.
- Oxidation potentials of ferrous and ferric salts in concentrated hydrochloric acid and phosphoric acid. S. R. Carter and F. H. Clews. *Chem. Soc. Trans.*, September, 1924, pp. 1880-1888.
- ANALYSIS.**—A new method of micro-gas analysis. L. Reeve. *Chem. Soc. Trans.*, September, 1924, pp. 1946-1954.

## United States

- ABRASIVES.**—Manufacturing an artificial abrasive. *Chem. Met. Eng.*, September 29, 1924, pp. 501-503.
- ALKYLATION.**—The catalytic alkylation of ammonia. A. B. Brown and E. E. Reid. *J. Phys. Chem.*, October, 1924, pp. 1067-1076.
- DEHYDRATION.**—The catalytic dehydration of alcohols. A. B. Brown and E. E. Reid. *J. Phys. Chem.*, October, 1924, pp. 1077-1081.
- CARBON.**—A study of the density of carbon. H. C. Howard and G. A. Hulett. *J. Phys. Chem.*, October, 1924, pp. 1082-1095.
- REDUCTION.**—Irreversible reduction and catalytic hydrogenation. J. B. Conant and H. B. Cutter. *J. Phys. Chem.*, October, 1924, pp. 1096-1107.
- ATOMIC WEIGHTS.**—A revision of the atomic weight of germanium. Part I. The analysis of germanium tetrachloride. G. P. Baxter and W. C. Cooper. *J. Phys. Chem.*, October, 1924, pp. 1049-1066.
- COLLOIDS.**—On the stability of colloidal solutions. Part I. Aluminium hydroxide suspension. K. C. Sen. *J. Phys. Chem.*, October, 1924, pp. 1029-1035.

## French

- ADSORBENTS.**—Silica gel, its preparation, nature and uses. J. H. Frydlander. *Rev. Prod. Chim.*, September 30, 1924, pp. 613-616.
- COTTON.**—Cotton and its spontaneous inflammation. A. Dubosc. *Rev. Prod. Chim.*, September 30, 1924, pp. 617-618.
- ALCOHOLS.**—Magnesium alcoholates and their application to the synthesis of alcohols. M. Terenteff. *Bull. Soc. Chim.*, September, 1924, pp. 1145-1152.
- NITRATION.**—Summary of the investigations relating to the nitration of derivatives of *m*- and *p*-aminophenols. F. Reverdin. *Bull. Soc. Chim.*, September, 1924, pp. 1168-1183.
- ANALYSIS.**—Quantitative organic micro-analysis. M. Nicloux. *Bull. Soc. Chim.*, September, 1924, pp. 1041-1069.
- Method for the analysis of volatile organic substances by combustion in an open tube. M. E. Carrière and C. Leenhardt. *Bull. Soc. Chim.*, September, 1924, pp. 1206-1207.

**HYDRATES.**—The hydrates of sodium hyposulphite. M. Picon. *Bull. Soc. Chim.*, September, 1924, pp. 1093-1112.

**PHOSPHATES.**—Investigations of metaphosphates. Parts II and III. P. Pascal. *Bull. Soc. Chim.*, September, 1924, pp. 1119-1141.

**HYPOCHLORITES.**—Sodium hypochlorite. A. Sanfourche and L. Gardent. *Bull. Soc. Chim.*, September, 1924, pp. 1088-1093.

## German

**STARCH.**—The constitution of starch, glycogens and moss starch. H. Pringsheim. *Ber.*, September 10, 1924, pp. 1581-1598.

**CRACKING.**—The pyrogenous decomposition of homogeneous organic compounds. Part I. Some aryl paraffins and fatty acid esters. S. Skraup and F. Nietsen. *Ber.*, September 10, 1924, pp. 1294-1310.

**DRUGS.**—The chemo-therapeutic action of arsenic, antimony and bismuth. G. Giemsa. *Z. angew. Chem.*, October 2, 1924, pp. 765-772.

**ACIDS.**—Experimental study of the formation of nitrous acid by passing nitric oxide through nitric acid. E. Abel and D. Harasty. *Z. anorg. u. allg. Chem.*, September 26, 1924, pp. 1-39.

Contribution to the knowledge of sulphurous acid and its salts. Part II. The decomposition of sulphites at a glowing heat. F. Foerster and K. Kubel. *Z. anorg. u. allg. Chem.*, September 26, 1924, pp. 261-292.

**SILICON COMPOUNDS.**—Siloxene and its derivatives. H. Kautsky and G. Herzberg. *Z. anorg. u. allg. Chem.*, September 26, 1924, pp. 135-160.

**ANALYSIS.**—Bromometric determinations. W. Manchot and F. Oberhauser. *Z. anorg. u. allg. Chem.*, September 26, 1924, pp. 40-50.

Selective estimation of vanadium in presence of iron and chromium. Part I. Estimation of vanadium in presence of iron. K. Someya. *Z. anorg. u. allg. Chem.*, September 26, 1924, pp. 237-245.

The use of paper pulp in analytical filtration. E. Wilke-Dörfurt and E. Locher. *Z. anal. Chem.*, No. 11, 1924, pp. 436-441.

The bromometric estimation of thiocyanate. A. Kurlenacker and H. Kubina. *Z. anal. Chem.*, No. 11, 1924, pp. 442-444.

## Miscellaneous

**RUBBER.**—Isoprene and rubber. Part VII. Homologues of hydrocaoutchouc. H. Standinger and W. Widmer. *Helv. Chim. Acta*, October 1, 1924, pp. 842-848.

**COLOUR.**—Colour and constitution. Part IX. F. Kehrman. *Helv. Chim. Acta*, October 1, 1924, pp. 964-968.

The colour of simple quinone-imines and their salts. Part II. Some new quinone-imines and remarks on their stability. B. Cordone. *Helv. Chim. Acta*, October 1, 1924, pp. 956-964.

**ANALYSIS.**—The separation of mercury and arsenic. P. Wenger and M. Schilt. *Helv. Chim. Acta*, October 1, 1924, pp. 907-909.

Exact gas analysis methods for the analysis of gaseous fuels. E. Ott. *Helv. Chim. Acta*, October 1, 1924, pp. 886-898.

**HYDRIDES.**—Solid hydrides of arsenic. L. Moser and A. Brukl. *Monats. für Chem. (Vienna)*, September 19, 1924, pp. 25-37.

**ANTHRAQUINONE DERIVATIVES.**—Dimethyltetraoxy-anthraquinone. G. Flumiani. *Monats. für Chem. (Vienna)*, September 19, 1924, pp. 43-49.

**ACIDS.**—Parabanic acid. R. Andreasch. *Monats. für Chem. (Vienna)*, September 19, 1924, pp. 9-12.

Optically active  $\alpha\beta$ -dibromopropionic acid and  $\alpha\beta$ -dichloropropionic acid. P. Karrer and W. Klarer. *Helv. Chim. Acta*, October 1, 1924, pp. 929-931.

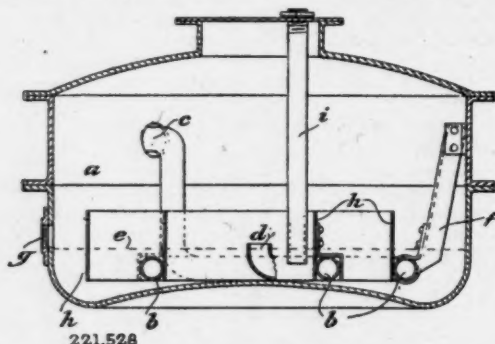
Carbamide and guanidine derivatives of sulpho-fatty acids. Part II. R. Andreasch. *Monats. für Chem. (Vienna)*, September 19, 1924, pp. 1-7.

## Patent Literature

### Abstracts of Complete Specifications

- 221,528. DEHYDRATION AND DISTILLATION OF TAR OR OILS. Thermal, Industrial and Chemical (T.I.C.) Research Co., Ltd., and D. Rider, 52, Grosvenor Gardens, London, S.W.1. Application date, April 10, 1923.

When tars or oils are dehydrated or distilled by passing through pipes immersed in molten metal, the absence of a definite vapour space in the pipes may lead to overheating the liquid and a consequent cracking and deposition of carbon. In this invention, the temperature of the molten metal is maintained only a few degrees above the boiling point of the

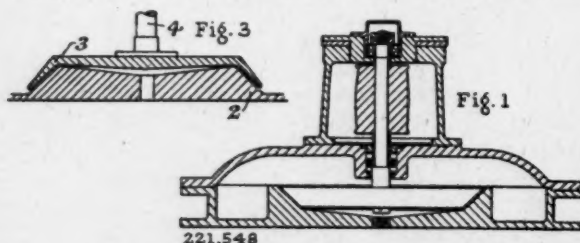


highest boiling distillate which is desired. In the dehydration of tar or the distillation of lighter fractions, the excess of temperature may be about 10°-15° C., but may be greater if heavier fractions are being distilled. The liquid in contact with the walls of the pipes is never overheated, and cracking is avoided. To rectify any inequality in the heating of the liquid in the pipe, the liquid and vapour may be released on to the surface of the molten metal so that the whole of it is brought to a uniform temperature.

The still *a* contains a spiral pipe *b*, an inlet *c*, and an outlet *d*, which projects slightly above the level *e* of the molten metal. The unvaporised portions thus flow over the surface of the metal in a spiral path due to the spiral baffle *h*, to the outlet *g*. A thermostatic temperature regulator *i* may be provided.

- 221,548. PRODUCING DISRUPTIVE FORCES IN FILMS OF LIQUID OR SUSPENSIONS OF SUBSTANCES IN LIQUIDS CONFINED BETWEEN CLOSELY ADJACENT SURFACES ROTATING RELATIVELY TO ONE ANOTHER AT HIGH SPEEDS. Burt, Boulton and Haywood, Ltd., Salisbury House, London Wall, London, E.C., and F. J. E. China, Down House, Esher, Surrey. Application date, June 6, 1923.

A film mill is illustrated in which a chamber *a* contains a rotor *c* having a working surface *d* arranged with a small clearance in relation to a stationary surface *f*. The disintegrating effect is dependent on the thickness of the film



and the speed of the moving surface. It is found that if the thickness of the film is about 0.006 inches, and the speed of the moving surface is about 250 feet per second, the shearing forces obtained are not sufficient to disintegrate hard substances in suspension, such as barytes. It is found that stream-line markings are produced on the concave conical working surface, which enable the velocity of the particles in the film to be calculated. When the liquid comes in contact

with the rotor *c*, the latter imparts a circumferential velocity to it, but the centrifugal force thus generated tends to throw the liquid against the stationary surface *f*. The velocity is thus reduced to less than half the circumferential velocity of the rotor. If the apparatus is modified by making the conical member 2 stationary, and the cup-shaped member 1 rotary, the centrifugal force imparted to the liquid throws it against the rotating surface instead of the fixed surface, and the circumferential velocity of the liquid is thus maintained instead of being reduced, and the disruptive force on the solid in suspension is increased. These disruptive forces are greater as the diameter of the rotating member is reduced, while the peripheral speed is kept the same. The effect may be still further increased by causing the two surfaces to rotate in opposite directions.

- 221,553. SYNTHETIC GUM, MANUFACTURE AND PRODUCTION OF. J. Y. Johnson, London. From Diamond State Fibre Co., Elsmere, New Castle Co., Del., and Bridgeport, Montgomery Co., Pa., U.S.A. Application date, June 9, 1923.

The object is to obtain a synthetic gum suitable for use as an electrical insulator, as a water proofing and reinforcing agent for fibrous material, or for the manufacture of moulded articles. The gum is made by reaction between phenol or a homologue, and starch, dextrine, or glycogen, with a condensing agent. In an example, a mixture of phenol 100 grams, starch 50-75 grams, and sulphuric acid 5-20 drops, is boiled in a reflux apparatus for 10-30 hours, and the excess of phenol then removed by vacuum distillation. The condensation product is a viscous liquid soluble in alcohol or acetone, which solidifies on cooling. This material may be drawn off and dissolved in alcohol containing 3-10 per cent. of a hardening agent such as hexamethylene-tetramine, anhydroformaldehyde aniline, anhydro-acetaldehyde aniline, or dimethylsulphate. This solution may be used for impregnating fabrics, etc., or may be mixed with fillers for moulding purposes. The product may be heated to the temperature of steam at 125 lb. pressure, and subjected to a pressure of about 1,000 lb. per square inch. This substance is insoluble and infusible, and is a good electrical insulator. It is also capable of being machined. The phenol may be replaced by homologues such as ortho-, meta-, or para-cresol, or a compound containing a hydroxyl group joined to the benzene ring, such as the naphthols, thymol, carvacrol, chlorphenol, bromphenol, nitrophenols, phenolsulphonic acid, etc. Other condensing agents may be used such as pyridine, bromine, sulphur monochloride, aniline hydrochloride, etc. Reference is directed in pursuance of Section 8, Sub-section 2, of the Patents and Designs Acts of 1907 and 1919, to Specification No. 208,193.

- 221,559. CRACKING OR DECOMPOSITION OF MATERIAL CONTAINING HYDROCARBONS. M. Melamid, 9, Urachstrasse, Freiburg, i/Br. Germany. Application date, June 12, 1923.

Specifications Nos. 171,367, 174,321, 180,625 and 193,922 (see THE CHEMICAL AGE, Vols. VI., p. 48, Vol. VI, p. 396, and Vol. VIII., p. 376) describe the production of low boiling hydrocarbons from tar oils, mineral oils, etc., by subjecting the finely divided oil at a high temperature and in the presence of a protective gas to the action of a catalytic material which does not form a carbide. It is now found that this process is also applicable for treating the tars themselves, crude petroleum, coal, etc., for the production of distillates of low boiling point without leaving any residue of pitch, coke, or asphaltic material. The raw material must be injected in the form of a very fine spray, and may be passed through several reaction apparatus in series. The protective gas preferably contains hydrogen, and may be the hydrocarbon vapours produced in this process. The process may also be applied for treating the gaseous and tar products obtained from gas chambers, producers, etc. The light oils are separated from the products by cooling, washing, or compressing. An example is given of the treatment of producer tar from lignite or coal, to obtain paraffin and aromatic hydrocarbons and gas. The products containing oxygen soluble in sodium



hydroxide are converted into phenols and cresols, or are decomposed into hydrocarbons or lower boiling fractions such as acetone. The nitrogenous products are converted into hydrocarbons and ammonia, or recovered as pyridine or other azo cyclic compounds or amino bodies. About 30-40 per cent. of low-boiling hydrocarbons are obtained. Another example is given of the treatment of crude oils containing 40-50 per cent. of asphaltum residues and sulphur.

- 221,622. CARBURETTED WATER GAS, MANUFACTURE OF. Humphreys & Glasgow, Ltd., From O. B. Evans, Philadelphia, Pa., U.S.A. J. A. Perry, Swarthmore, Delaware, Co., Pa., U.S.A., and L. B. Eichengreen, Ardmore, Montgomery Co., Pa., U.S.A. Application date, August 3, 1923.

This process is for utilising heavy oils and residuums in the manufacture of carburetted water gas. The upper portion of the fuel bed receives a blast of secondary air around the periphery which wholly or partly burns the producer gas generated at the bottom by the primary blast, and provides an incandescent ring of fuel at the top of the charge. The heavy oil or residuum is introduced on to the top of this hot zone during the run, and is gasified partly by the sensible heat of the fuel and partly by the hot water-gas. The oil is gasified at the top of the fuel bed, and the oil gas is not decomposed by passage through the fuel, while any deposited pitch remains on the top of the fuel. This pitch is partly coked in the run period, and fully coked and consumed during the succeeding blows.

- 221,643. HALOGENATED VAT COLOURING MATTERS, MANUFACTURE AND PRODUCTION OF. J. Y. Johnson, London. From Badische Anilin & Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, September 18, 1923.

These vat colouring matters are obtained by chlorinating and brominating, or brominating and chlorinating, N-dihydro-1 : 2 : 1<sup>1</sup> : 2<sup>1</sup>-anthraquinone azine. When chlorination is followed by bromination, a sulphuric acid solution is preferably used for the brominating step, and the chlorination is effected in a dry condition or in concentrated sulphuric acid solution. When bromination is followed by chlorination, the operations are carried out with the dyestuff dissolved in concentrated sulphuric acid. These chloro-bromo-derivatives are fast to chlorine and practically insensitive to hard calcareous water. Examples are given of the treatment of indanthrene blue R S (N-dihydro-1 : 2 : 1<sup>1</sup> : 2<sup>1</sup>-anthraquinone azine).

- 221,679. RETORTS FOR THE CARBONISATION OF SOLID FUELS. A. L. J. Queneau, Frejus, (Var), France. Application date, October 31, 1923.

This retort is for the carbonisation of wood, coal, shales, lignite, etc. The retort consists of two parallel cylindrical portions which intersect one another so that the cross section resembles a figure 8. Each cylinder contains a tubular shaft, the axis of which is slightly below the axis of the cylinder. Each shaft carries blades arranged in a helical form so as to form a screw conveyor, and the peripheries of the two conveyors intersect one another. The shafts are rotated in opposite directions, and a cooling current of air is passed through the hollow shafts. The fuel is fed into the retort at one end, and is slowly carried through it by the conveyors. Spaces are left at the upper parts of the retort for the passage of the distillation gases. In another form, each shaft is constituted by a number of sections of cross-shape in transverse section. The sections are surrounded by rings having grooves corresponding to the projecting ribs of the cross. The rings carry the helical blades, and fit loosely on the shaft sections so that the rotating shaft can become deformed and adapt itself to the shape of the lower part of the retort, and thus prevent deposition of carbon. This method of coupling the shaft sections is of the kind used in rolling mills for driving the top cylinder by means of wobblers.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention : 202,975 (Rheinische Kampfer Fabrik Ges.) relating to production of aromatic sulphonic acids, see Vol. IX., p. 466.

### International Specifications not yet Accepted.

- 220,320-1. RETARDING DETERIORATION OF INDIARUBBER. Naugatuck Chemical Co., Elm Street, Naugatuck, Conn., U.S.A. (Assignees of S. M. Cadwell, 561, West 58th Street, New York.) International Convention date, August 8, 1923.

220,320. Some condensation products of aldehydes and amines, particularly of acetaldehyde and aniline, have the property of retarding the oxidation of indiarubber without affecting the rate of vulcanisation. As an example, a product obtained by condensing 1½ molecules of acetaldehyde and one molecule of aniline in an acid solution having a hydrogen ion concentration above  $1 \times 10^{-3}$  may be added to the rubber to retard oxidation. If the hydrogen ion concentration is between  $1 \times 10^{-3}$  and  $1 \times 10^{-9}$ , the product is a retarder of oxidation and an accelerator of vulcanisation, but the quantity necessary to retard oxidation is more than 1 per cent. of the mixture, while the quantity necessary to accelerate vulcanisation is less than this. The substance may be mixed with the rubber, or may be absorbed from a solution, or the rubber may be exposed in succession to aldehyde and aniline vapours. The rubber may be vulcanised in direct contact with air.

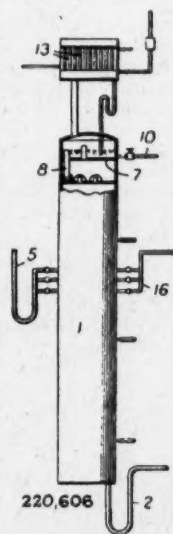
220,321. Vulcanised rubber is treated with a substance which is unable to activate oxygen, but which is capable of absorbing appreciable amounts of activated oxygen, and oxidation is thereby prevented. Suitable substances are those mentioned in Specification 220,321 above, and also phenylhydrazine, nitroso and halogen derivatives of aromatic amines, nitroso-β-naphthol, p-aminophenol hydrochloride, n-butyl nitrile, iodo-benzene, and dichloro-hydroquinone. These substances may be incorporated in the rubber as described in Specification 220,320 above.

- 220,597. SULPHUR. T. Goldschmidt Akt.-Ges., 18, Salkenbergsweg, Essen, Germany. International Convention date, August 16, 1923.

Sulphur vapour sublimed from a retort is mixed with ammonia, which may contain nitrogen. The sulphur is thus simultaneously cooled and dispersed, and then passes into a chamber where it is electrically precipitated. The sulphur thus obtained is highly dispersed.

- 220,606. DEHYDRATING ALCOHOLS AND GLYCOLS. J. A. Steffens, 71, Nevins Street, Brooklyn, New York. International Convention date, August 16, 1923.

Alcohol is mixed with a liquid which is immiscible with water, such as benzol, petroleum ether, or gasoline, and distilled. The residue consists of dehydrated alcohol, and the distillate separates into two layers, which are maintained at the still-head temperature. All except the lower third of the under layer is returned to the still, and the remaining third is again distilled to separate alcohol and benzol from water. The mixture of alcohol and water enters the still 1 by a pipe 5, and the vapour passes to a reflux condenser 13. The condensate passes to the chamber 7, and part of the lower layer is drawn off through the outlet 10. The remainder is returned to the still through the overflow 8. The alcohol and benzol which are separated from the layer removed by the outlet 10 may be returned by the pipe 16. Propyl or butyl alcohols or glycols may also be dehydrated by this method.



- 220,609. RED LEAD. H. Hocking, Magyitény, Hungary. International Convention date, August 16, 1923.

Metallic lead is heated above its melting point in a rotary ball mill, and subjected to oxidation by air under pressure, to obtain red lead in a single stage process. A pressure of 4-6 atmospheres is found suitable, and a temperature of 350°C. the process then taking about 4-6 hours. Lead oxide or white lead may also be treated by this method.



## LATEST NOTIFICATIONS

- 222,821. Process for the dechlorination of lead products containing chlorine. Nathansohn, Dr. A. October 3, 1923.  
 222,836. Process of producing hydrofluosilicic acid. Meyerhofer, A. F. October 1, 1923.  
 222,838. Process of decomposing alkali salts into hydroxides or carbonates and acids. Meyerhofer, A. F. October 1, 1923.

## Specifications Accepted, with Date of Application

- 200,815. Cellulose ethers, Manufacture of. L. Lilienfeld. July 13, 1922.  
 203,713. Membranes for ultra filtration and dialysis. J. Duclaux. September 11, 1922.  
 204,337. Boron and carbon, Process of producing substances from. Hartstoff-Metall Akt.-Ges. (Hametag). September 20, 1922.  
 207,196. Sulphur from a gas containing hydrogen sulphide, Process for obtaining. Farbenfabriken vorm. F. Bayer and Co. November 20, 1922.  
 208,721. Perylene, Process for the manufacture of. Compagnie Nationale de Matieres Colorantes et de Produits Chimiques. December 21, 1922.  
 222,159 and 222,423. Adsorbent materials, Manufacture of. J. N. A. Sauer. March 26, 1923.  
 222,181. Manures. I. Ishitani and Asahi Garasu Kabushiki Kaisha. June 21, 1923.  
 222,185-6. Separating intermixed divided materials of different specific gravities, Process and apparatus for. R. Peale, R. Peale, and R. Peale, jun. June 21, 1923.  
 222,279. Drying and coating porous materials for use as adsorbents and catalysts, Process for. G. D. Fitzpatrick. August 17, 1923.

## Applications for Patents

- British Celanese, Ltd., and Ellis, G. H. Treatment of cellulose derivatives. 23,816. October 8.  
 British Cyanides Co., Ltd. Moulded, rolled, &c., articles. 23,731. October 7.  
 Calico Printers' Association, Ltd. Drying, lustring, and finishing machines for fabrics. 24,050. October 10.  
 Cederberg, I. W. Catalytic combustion of ammonia-oxygen mixtures. 23,708. October 7. (Germany, Dec. 4, 23).  
 Coley, H. E. Production of iron from iron ores. 24,000. October 10.  
 Crozier, R. H. Vertical retorts for distillation of shale, &c. 23,689. October 7.  
 Héreng, A. J. A. Distillation of fuel. 24,084. October 11.  
 Knoll & Co. Preparation of dihydrocodeinone from thebaine. 23,835. October 8. (Germany, December 7, 1923).  
 Mayer, H., and Ornstein, E. Manufacture of lampblack and soot. 23,739. October 7.  
 Naamlooze Vennootschap Philips' Gloeilampenfabrieken. Precipitating chemical compounds on an incandescent body, &c. 24,076. October 10. (Holland, October 11, 1923).  
 Naamlooze Vennootschap Philips' Gloeilampenfabrieken. Manufacture of hafnium and zirconium compounds. 24,125. October 11. (Holland, November 15, 1923).  
 Nielsen, H. Distillation of carbonaceous materials. 24,084. October 10.  
 Paterson, W. Apparatus for treating liquids with chemical reagents, &c. 23,836. October 8.  
 Welter, A. Manufacture of fatty acids. 24,052. October 10. (Germany, October 23, 1923).

## German Trade During September

## Effect of the London Agreement

THE Commercial Secretary at Berlin (Mr. J. W. F. Thelwall) has forwarded to the Department of Overseas Trade a review based on the reports of the Prussian Chambers of Commerce of the trade and industry of Germany during September, 1924. According to his report the economic situation showed a small improvement during the month, particularly in the case of the mining, potash and textile industries, and certain branches of the food industry. In general, the hopes attached in many quarters to the London Agreement have not yet materialised.

In the potash industry there was an important increase both in inland and foreign sales. The reinstatement of workmen who had been previously dismissed was possible in individual works.

There was no change of any importance in the situation of the chemical industry. Sales of fertilisers have increased. In the dye industry the market possibilities continue unsatisfactory. Business in glass chemicals improved slightly, while only a few orders for laboratory chemicals were received. Scientific institutions lack just as much as the large industrial laboratories the requisite money for covering even their most urgent requirements.

## Texas Kaolin and China Clay

A RECENT sample of kaolin taken from a large deposit at Texas was found to be practically pure white, very uniform, and comparatively coarse-grained and without plasticity.

Six white-ware bodies, varying in ball clay content from 0 to 14 per cent., and in which English China Clay was replaced in increasing amounts by Texas kaolin, were made up in various forms. Test bars were used in determining shrinkage, transverse strength, and absorption, and discs used in determining relative resistance to impact. In addition, several shapes were made by the casting process, using slips containing Texas kaolin. The results gave very high transverse strength when dried. The fired bodies were exceptionally white, but had a high absorption and were correspondingly low in transverse strength and resistance to impact. The glaze specimen were effective as regards resistance to crazing. Results suggest that Texas kaolin could be used satisfactorily in white-ware bodies, but because of the relative coarseness of grains and its high refractory nature it would require more preliminary grinding than the English clays as well as the use of a larger percentage of ball clay to produce the desired dried and burned structure in the body.

## Large Clay Pots Made by Casting Process

THE drying of several clay pots of unusually large size has recently been finished by the Bureau of Standards, says *Industrial and Engineering Chemistry*. The pots were made by the casting process developed at the Bureau of Standards, and are intended for use in making optical glass. Each one is 3 ft. 6 in. high and has an outside diameter of 4 ft. 9 in. The walls have a maximum thickness of 5 in., and each pot requires 1.5 tons of material.

In making pots by this process the clay slip is poured into a plaster mould and allowed to "set" or harden. To make the mould for these large pots 10 tons of plaster were required, and a number of difficulties were encountered in handling so much of this material. For example, in making the largest section it was necessary to mix the plaster in eight batches. Retarder was added to each batch in such proportions that all parts of the mould became hard at about the same time; otherwise the bottom of the casting would have become too hard for turning before the top was hard enough to permit removal of the forms.

## West Yorkshire Metallurgical Society

THE third annual general meeting of the West Yorkshire Metallurgical Society was held at Huddersfield on Tuesday, October 7. The annual report, which was presented by the secretary, stated that meetings had been held during the session to hear papers on refractories, casting defects, coke, steel castings, methods of analysis, metallurgical specifications, and other subjects. Some visits to works in the district were also arranged and appreciatively attended. Through the generosity of members who have given or loaned books to the society a scientific lending library has been opened during the session. There are now a large number of works of reference available which should prove a useful asset to members of the Society.

Mr. H. F. Coggan (Halifax) was elected president for the coming session, and the following members of committee were elected: G. E. France, L. Hemingway, A. Hill, G. Ledgard, S. Moorhouse, F. T. L. Poole, B. Thorpe, H. Wilkinson. Mr. H. C. Dews was elected honorary editor, and Mr. H. North, 5, Bell Street, Newsome, Huddersfield, honorary secretary.

## Sulphur as a Fertiliser

IN the opinion of those who have conducted extensive experiments with it in France, sulphur has a much greater fertilising action than is generally thought. It is claimed that the use of sulphur in the soil has resulted in substantial increases in the yields of vegetables. In one set of experiments the yield of potatoes was increased 15 per cent. and that of turnips 30 per cent. Experiments conducted by the Government agricultural service showed an increase of 1,300 kg. of tomatoes on a hectare of land on which 199 kilos of sulphur had been added to the soil, in addition to the regular fertiliser. It has been found that sulphur increases the starch content of vegetables and promotes vigorous foliation.

It had been demonstrated before the war that sulphur had value as a fertiliser in addition to its bacterial influence, while the sulphuric acid derived from the sulphur aided in the freeing of potash.

## London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing those firms' independent and impartial opinions.

London, October 16, 1924.

In the home trade market business during the past week has been fairly satisfactory and the set-back which might have been expected owing to the uncertain political situation has not been apparent. On the whole, prices are firmer. The export market is much brisker. Quite a substantial volume of business has been put through, chiefly for export of chemicals direct to the Continent. Overseas inquiry remains good.

### General Chemicals

ACETONE remains unchanged at £94 per ton ex wharf, London.

ACID ACETIC is in steady demand, the 80% grades unchanged at £44 per ton for technical and £45 per ton for pure.

ACID CITRIC is lifeless. Second hands are still realising and with heavy losses. Makers will not meet the spot price.

ACID FORMIC is in fair demand. Price about £53 per ton for 85%.

ACID LACTIC unchanged.

ACID OXALIC is a steady market. The demand from the textile district is rather better. Price unchanged at 4d. per lb.

ACID TARTARIC.—The market is still influenced by forced realisations, but the makers are expecting higher prices shortly.

ALUMINA SULPHATE remains in buyers' favour owing to the price war between the Continental makers. Price nominally £7 5s. per ton for 17-18%.

ARSENIC is quiet and uninteresting, price ruling at about £44 per ton.

BARIUM CHLORIDE is in fair demand at £12 10s. per ton.

COPPER SULPHATE is without special feature. Price ruling at about £22 10s. to £23 per ton.

CREAM OF TARTAR is firmer in price and in fairly good demand.

FORMALDEHYDE is rather more active, price ruling at £50 per ton.

EPSOM SALTS.—The low priced contracts are running out and the higher level asked by the manufacturers may shortly be realised.

LEAD ACETATE is in fair demand although buyers are only purchasing from hand to mouth. White is quoted at £45 per ton, brown at £43 10s. per ton.

LEAD NITRATE is very firm. Price is £43 10s. per ton and seems likely to advance.

LIME ACETATE.—Unchanged at £16 10s. per ton.

MAGNESIUM CHLORIDE.—The improved prices have been maintained, but demand has fallen off somewhat.

METHYL ALCOHOL.—Unchanged at £60 per ton.

POTASH CAUSTIC.—The higher prices are probably due to an understanding between Continental manufacturers. The market is more stable than it has been for a long time.

POTASH PERMANGANATE.—The spot market has responded to the higher quotations from abroad. Price, 7½d. to 7¾d. per lb.

POTASH PRUSSIAN is in fair demand and is quoted at 7½d. per lb.

SODA ACETATE.—The demand has picked up somewhat and the price of £22 10s. per ton seems very low.

SODA HYPOSULPHITE.—Unchanged.

SODA NITRITE is in fair demand, price £25 per ton.

SODA PRUSSIAN is steady at about 4½d. per lb.

SODA SULPHIDE.—Unchanged.

### Coal Tar Products

The market in coal tar products is quiet, there being very little variation in values since last week.

90% BENZOL.—Remains steady at 1s. 4d. per gallon on rails.

PURE BENZOL is quiet at 1s. 7d. to 1s. 8d. per gallon on rails.

CREOSOTE OIL is steady at 5½d. to 5¾d. per gallon on rails in the North, and 6d. to 6½d. per gallon in London.

CRESYLIC ACID is in no great demand. The price for the pale quality 97/99% remains steady at from 1s. 11d. to 2s. per gallon on rails, while the dark quality 95/97% is rather more plentiful, and is quoted at from 1s. 7d. to 1s. 8d. per gallon on rails.

SOLVENT NAPHTHA is quietly steady at 11d. to 1s. per gallon on rails.

HEAVY NAPHTHA is quoted at 10d. to 11d. per gallon on rails.

NAPHTHALENES are still in very poor demand, the higher grade 76/78 being offered at from £6 10s. to £7 10s. per ton, and 74/76 quality at from £5 10s. to £6 per ton. There is a fair inquiry for the lower grades, while supplies are also fairly plentiful, so that there is no stiffening in price. It is quoted at from £3 10s. to £4 per ton.

PITCH.—The market has developed a firmer tone, values being:—42s. 6d. to 47s. 6d. f.o.b. London; 40s. to 42s. 6d. f.o.b. East Coast; 37s. 6d. to 40s. f.o.b. West Coast.

SULPHATE OF AMMONIA.—There is no change to report.

### Nitrogen Products Market

The prices for export are £13 15s. per ton f.o.b. for immediate shipment, and £14 to £14 10s. per ton for forward, in accordance with position. The higher price is for March/April delivery. At present the market is quiet, but producers are holding firmly for these prices.

There is no change in the home agricultural position, the price for October delivery being £14 4s. per ton delivered to consumers' nearest station, basis 21'1 per cent. nitrogen. It is expected that the prices for November and December delivery will be advanced.

The market for Nitrate of Soda is firmer. The Producers' Association have sold for the present year commencing 1st July 1,690,000 tons, which is 190,000 tons above the figure sold at this time last year. The statistical position of the nitrate producers is such that it is expected that this market will become still firmer.

### American Market Movements

(From "Drug and Chemical Markets.")

DEMAND for industrial chemicals was slower during the final week of the month. September business, however, was reported better than the previous month. A firmer tone is noted in imported chemicals. Major metals are easier. Dyes and intermediates are moving in fair quantities at unchanged prices. Textile business is reported to have improved. Benzol continues scarce and sales are being made at higher figures than recent quotations. Phenol is firmer. Pyridine is scarce. Chinawood oil continues strong with sales at slightly higher figures. Cottonseed oil is nervous and unsettled. Linseed oil is quiet. Flaxseed is tending upward. Turpentine is weak and rosins are a trifle easier.

Fine chemicals are not as active as last week. Declines in mercury, menthol, and potassium permanganate are noted. Bromides are firm and active. Camphor is dull. Essential oils show a disposition to react from recent highs. Oil peppermint is offered at \$5.25 lb. in country. Oil cassia is also cheaper for shipment. Oil cedar wood is higher. Oil Java citronella is still scarce. Crude drugs are generally steady, although some scarcities tend to hold up interest in the market. Cascara sagrada is offered at 12½c. lb. f.a.s. coast. Aconite root is lower. Cartagena ipecac root is firm.

### Demand for Diphenylamine and Oleum

A BELGIAN correspondent is anxious to be put in touch with English manufacturers of Diphenylamine and Oleum, for refining, saponic and perfumery purposes. The name and address of the inquirer, together with specifications, may be obtained on application to the Editor of THE CHEMICAL AGE, 8, Bouverie Street, London, E.C.4.



## Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at sellers' works.

### General Heavy Chemicals

Acid Acetic 40% Tech.—£23 10s. per ton.  
 Acid Boric, Commercial.—Crystal, £45 per ton. Powder, £47 per ton.  
 Acid Hydrochloric.—3s. 9d. to 6s. per carboy d/d., according to purity, strength and locality.  
 Acid Nitric 80° Tw.—£21 10s. to £27 per ton, makers' works according to district and quality.  
 Acid Sulphuric.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 65s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.  
 Ammonia Alkali.—£6 15s. per ton f.o.r. Special terms for contracts.  
 Bleaching Powder.—Spot, £11 d/d.; Contract, £10 d/d. 4 ton lots.  
 Bisulphite of Lime.—£7 per ton, packages extra.  
 Borax, Commercial.—Crystal, £25 per ton. Powder, £26 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)  
 Calcium Chloride.—£5 17s. 6d. per ton d/d.  
 Copper Sulphate.—£25 per ton.  
 Methylated Spirit 64 O.P.—Industrial, 2s. 7d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.  
 Nickel Sulphate.—£38 per ton d/d. Normal business.  
 Nickel Ammonia Sulphate.—£38 per ton d/d. Normal business.  
 Potash Caustic.—£30 to £33 per ton.  
 Potassium Bichromate.—5½d. per lb.  
 Potassium Chlorate.—3d. to 4d. per lb.  
 Sal ammoniac.—£32 per ton d/d.  
 Salt Cake.—£3 10s. per ton d/d.  
 Soda Caustic, Solid.—Spot lots delivered, £16 7s. 6d. to £19 7s. 6d. per ton, according to strength; 20s. less for contracts.  
 Soda Crystals.—£5 5s. to £5 10s. per ton ex railway depots or ports.  
 Sodium Acetate 97/98%.—£24 per ton.  
 Sodium Bicarbonate.—£10 10s. per ton carr. paid.  
 Sodium Bichromate.—4½d. per lb.  
 Sodium Bisulphite Powder 60/62%.—£17 to £18 per ton, according to quantity, f.o.b., 1-cwt. iron drums included.  
 Sodium Chlorate.—3d. per lb.  
 Sodium Nitrate refined 96%.—£13 5s. to £13 10s. per ton, ex Liverpool. Nominal.  
 Sodium Nitrite 100% basis.—£27 per ton d/d.  
 Sodium Sulphide conc. 60/65.—About £14 10s. per ton d/d.  
 Sodium Sulphide Crystals.—£9 per ton d/d.  
 Sodium Sulphite, Pea Crystals.—£15 per ton f.o.r. London, 1-cwt. bags included.

### Coal Tar Products

Acid Carbolic Crystals.—6½d. to 6½d. per lb. Quiet. Crude 60° 1s. 7d. to 1s. 9d. per gall. according to district. Market flat.  
 Acid Cresylic 97/99.—2s. to 2s. 1d. per gall. Demand fair.  
 Pale 95%, 1s. 9d. to 2s. 1d. per gall. Better inquiry. Dark, 1s. 9d. to 2s. per gall. Fairly steady.  
 Anthracene Paste 40%.—4d. per unit per cwt. Nominal price. No business.  
 Anthracene Oil, Strained.—6½d. to 6½d. per gall. Small demand. Unstrained, 6d. to 6½d. per gall.  
 Benzol.—Crude 65's.—7½d. to 9d. per gall., ex works in tank wagons. Standard Motor, 1s. 1½d. to 1s. 3d. per gall., ex works in tank wagons. Pure, 1s. 5½d. to 1s. 7d. per gall., ex works in tank wagons.  
 Toluol.—90%, 1s. 5d. to 1s. 5½d. per gall. Pure, 1s. 8d. to 1s. 9d. per gall. Small demand.  
 Xylol Commercial.—1s. 9d. per gall. Pure, 2s. 3d. per gall. Prices reduced.  
 Creosote.—Cresylic, 20/24%, 8½d. per gall. Little demand. Middle Oil, Heavy, Standard specification, 5½d. to 6d. per gall., according to quality and district. Small demand from America.  
 Naphtha.—Crude, 8d. to 9d. per gall. Solvent 90/160, 11d. to 1s. per gall., according to district. Demand good. Solvent 90/190, 11d. to 1s. per gall. Fair inquiry.  
 Naphthalene Crude.—Demand rather better. Cheaper in Yorkshire than in Lancashire. Drained Creosote Salts, £4 to £6 per ton. Quiet. Whizzed or hot pressed, £6 to £9 per ton.  
 Naphthalene.—Crystals and Elaked, £12 to £15 per ton, according to district.  
 Pitch.—Medium soft, 40s. to 45s. per ton, f.a.s. Market very flat. No business.  
 Pyridine.—90/160, 18s. 6d. to 19s. per gall. Steady demand. Heavy, 12s. Little business.

### Intermediates and Dyes

Business in dyestuffs has again been better and users seem to have more confidence.

In the following list of Intermediates delivered prices include packages except where otherwise stated.

Acetic Anhydride 95%.—1s. 7d. per lb.  
 Acid H.—3s. 11d. per lb. 100% basis d/d.  
 Acid Naphthionic.—2s. 4d. per lb. 100% basis d/d.  
 Acid Neville and Winther.—5s. 8d. per lb. 100% basis d/d.  
 Acid Salicylic, technical.—1s. 1d. per lb. Improved demand.  
 Acid Sulphanilic.—9½d. per lb. 100% basis d/d.  
 Aluminium Chloride, anhydrous.—1s. per lb. d/d.  
 Aniline Oil.—8d. per lb. naked at works.  
 Aniline Salts.—8½d. per lb. naked at works.  
 Antimony Pentachloride.—1s. per lb. d/d.  
 Benzidine Base.—4s. per lb. 100% basis d/d.  
 Benzyl Chloride 95%.—1s. 1d. per lb.  
 p-Chlorophenol.—4s. 3d. per lb. d/d.  
 p-Chloraniline.—3s. per lb. 100% basis.  
 o-Cresol 19/31° C.—4½d. per lb. Rather quiet.  
 m-Cresol 98/100%.—2s. 1d. to 2s. 3d. per lb. Demand moderate.  
 p-Cresol 32/34° C.—2s. 1d. to 2s. 3d. per lb. Demand moderate.  
 Dichloraniline.—2s. 3d. to 3s. per lb.  
 Dichloraniline S. Acid.—2s. 6d. per lb. 100% basis.  
 p-Dichlorbenzol.—£85 per ton.  
 Diethylaniline.—4s. 6d. per lb. d/d., packages extra, returnable.  
 Dimethylaniline.—2s. 3d. per lb. d/d. Drums extra.  
 Dinitrobenzene.—9d. to 10d. per lb. naked at works.  
 Dinitrochlorbenzol.—£84 10s. per ton d/d.  
 Dinitrotoluene.—48/50° C. 8d. to 9d. per lb. naked at works.  
 66/68° C. 1s. 2d. per lb. naked at works.  
 Diphenylaniline.—2s. 10d. per lb. d/d.  
 Monochlorbenzol.—£63 per ton.  
 B-Naphthol.—1s. per lb. d/d.  
 s-Naphthylamine.—1s. 4d. per lb. d/d.  
 B-Naphthylamine.—4s. per lb. d/d.  
 m-Nitraniline.—4s. 3d. per lb. d/d.  
 p-Nitraniline.—2s. 3d. per lb. d/d.  
 Nitrobenzene.—5½d. to 5½d. per lb. naked at works.  
 o-Nitrochlorbenzol.—2s. per lb. 100% basis d/d.  
 Nitronaphthalene.—10½d. per lb. d/d.  
 p-Nitrophenol.—1s. 9d. per lb. 100% basis d/d.  
 p-Nitro-o-amido-phenol.—4s. 6d. per lb. 100% basis.  
 m-Phenylene Diamine.—3s. 11d. per lb. d/d.  
 p-Phenylene Diamine.—10s. 2d. per lb. 100% basis d/d.  
 R. Salt.—2s. 5d. per lb. 100% basis d/d.  
 Sodium Naphthionate.—2s. 3d. per lb. 100% basis d/d.  
 o-Toluidine.—10d. per lb.  
 p-Toluidine.—2s. 10d. per lb. naked at works.  
 m-Toluylene Diamine.—4s. per lb. d/d.

### Wood Distillation Products

Acetate of Lime.—Brown £12 per ton d/d. Grey £16 per ton. Market easier. Liquor, 9d. per gall. 32° Tw.  
 Charcoal.—£7 15s. to £9 5s. per ton, according to grade and locality. Market brisker.  
 Iron Liquor.—1s. 7d. per gall. 32° Tw. 1s. 2d. per gall. 24° Tw.  
 Red Liquor.—10d. to 1s. per gall. 14/15° Tw.  
 Wood Creosote.—2s. 9d. per gall. Unrefined.  
 Wood Naphtha, Miscible.—4s. 10d. per gall. 60% O.P. Market dull. Solvent, 5s. 3d. per gall. 40% O.P. Fairly good demand.  
 Wood Tar.—£4 5s. per ton. Cheaper.  
 Brown Sugar of Lead.—£43 per ton. Cheaper.

### Rubber Chemicals

Antimony Sulphide.—Golden, 6½d. to 1s. 2d. per lb., according to quality. Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.  
 Arsenic Sulphide, Yellow.—1s. 11d. per lb.  
 Barytes.—£3 10s. to £6 15s. per ton, according to quality.  
 Cadmium Sulphide.—3s. 9d. to 4s. per lb., according to quantity.  
 Carbon Bisulphide.—£30 to £33 per ton, according to quantity. Again dearer.  
 Carbon Black.—7d. to 7½d. per lb., ex-wharf. Dearer.  
 Carbon Tetrachloride.—£60 to £65 per ton, according to quantity. drums extra. Again dearer.  
 Chromium Oxide, Green.—1s. 3d. per lb.  
 Indiarubber Substitutes, White and Dark.—5d. to 9½d. per lb. Demand very brisk. Prices likely to remain steady owing to firmness of rapeseed oils.  
 Lamp Black.—£48 per ton, barrels free.  
 Lead Hyposulphite.—7½d. per lb.  
 Lithopone, 30%.—£22 10s. per ton.  
 Mineral Rubber "Rubpron".—£16 5s. per ton f.o.r. London



Sulphur.—£10 to £12 per ton, according to quality.  
Sulphur Chloride.—4d. per lb., carboys extra. Dearer.  
Sulphur Precip. B.P.—£47 10s. to £52 10s. per ton according to quantity.

Thiocarbamide.—2s. 6d. per lb.  
Vermilion, Pale or Deep.—5s. 1d. per lb. Dearer.  
Zinc Sulphide.—7½d. to 1s. 8d. per lb., according to quality

#### Pharmaceutical and Photographic Chemicals

Acid, Acetic 80% B.P.—£47 per ton. Firmer.  
Acid, Acetyl Salicylic.—3s. 1d. per lb. Sales steady. Price firm.  
Acid, Benzoic B.P.—3s. to 3s. 6d. per lb.  
Acid, Boric B.P.—Crystal £51 per ton, Powder £55 per ton. Carriage paid any station in Great Britain.  
Acid, Camphoric.—19s. to 21s. per lb.  
Acid, Citric.—1s. 3½d. to 1s. 4½d. per lb., less 5% for ton lots. Market very weak.  
Acid, Gallic.—3s. per lb. for pure crystal.  
Acid, Pyrogallic, Crystals.—6s. 9d. per lb. for 1 cwt. lots. Market firm. Increasing demand.  
Acid, Salicylic.—1s. 6d. to 1s. 8d. per lb., according to quantity.  
Acid, Tannic B.P.—2s. 10d. per lb. Market quiet.  
Acid, Tartaric.—1s. 1½d. per lb., less 5%.  
Amidol.—9s. per lb. d/d.  
Acetanilide.—2s. per lb. for quantity. More inquiry.  
Amidopyrin.—16s. 6d. per lb. for spot stocks.  
Ammonium Benzoate.—3s. 3d. to 3s. 6d. per lb., according to quantity.  
Ammonium Carbonate B.P.—£37 per ton.  
Atropine Sulphate.—12s. 6d. per oz. for English make.  
Barbitone.—14s. 3d. per lb. Cheaper.  
Benzonaphthol.—5s. 3d. per lb. Small inquiry.  
Bismuth Salts.—Prices reduced by about 1s. 3d. to 2s. 3d. per lb. on account of the fall in the price of the metal.  
Bismuth Carbonate.—10s. 6d. to 12s. 6d. per lb.  
Bismuth Citrate.—10s. 3d. to 12s. 3d. per lb.  
Bismuth Salicylate.—9s. 0d. to 11s. 0d. per lb.  
Bismuth Subnitrate.—9s. 8d. to 10s. 8d. per lb.  
Borax B.P.—Crystal £29, Powder £30 per ton. Carriage paid any station in Great Britain.  
Bromides.—Potassium, 1s. 4d. to 1s. 7d. per lb.; sodium, 1s. 5d. to 1s. 8d. per lb.; ammonium, 1s. 6d. to 1s. 9d. per lb. Market firm and Continental prices fully maintained with upward tendency.  
Calcium Lactate.—1s. 6d. to 1s. 9d., according to quantity. Fair demand and steady market.  
Chloral Hydrate.—4s. per lb. Market easier after recent firmness.  
Chloroform.—2s. per lb. for cwt. lots. Very steady.  
Creosote Carbonate.—6s. 6d. per lb. Little demand.  
Formaldehyde.—£49 per ton, ex works. English make in casks. About 8s. per cwt. extra for carboys.  
Glycerophosphates.—Fair business passing. Calcium, soluble and citrate free, 7s. per lb.; iron, 8s. 9d. per lb.; magnesium, 9s. per lb.; potassium, 50%, 3s. 6d. per lb.; sodium, 50%, 2s. 6d. per lb.  
Guaiacol Carbonate.—10s. per lb.  
Hexamine.—3s. 1d. to 3s. 3d. per lb.  
Homatropine Hydrobromide.—30s. per oz.  
Hydrastine Hydrochloride.—English make offered at 120s. per oz.  
Hydroquinone.—4s. 3d. per lb. in cwt. lots. Foreign make.  
Hypophosphites.—Calcium, 3s. 6d. per lb. for 28 lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.  
Iron Ammonium Citrate B.P.—2s. 1d. to 2s. 5d. per lb., according to quantity.  
Magnesium Carbonate.—Light Commercial, £36 per ton net.  
Magnesium Oxide.—Light Commercial, £75 per ton, less 2½%; Heavy Commercial, £25 per ton, less 2½%; Heavy Pure, 1s. 6d. to 2s. per lb., according to quantity. Steady market.  
Menthol.—A.B.R. recrystallised B.P., 55s. per lb. Prices show signs of recovery. Synthetic, 26s. to 35s. per lb. Increasing demand.  
Mercurials.—Market very quiet. Red oxide, 5s. 3d. to 5s. 4d. per lb.; Corrosive sublimate, 3s. 6d. to 3s. 7d. per lb.; white precipitate, 4s. 7d. to 4s. 8d. per lb.; Calomel, 3s. 11d. to 4s. per lb.  
Methyl Salicylate.—1s. 10d. to 2s. per lb. Seasonal increase in demand.  
Methyl Sulphonate.—24s. per lb. Slightly weaker.  
Metol.—11s. per lb. British make.  
Morphine and Salts.—Reduced by 1s. to 1s. 3d. per oz.  
Paraformaldehyde.—2s. 8d. for B.P. Quality.  
Paraldehyde.—1s. 4d. to 1s. 6d. per lb., in free bottles and cases. Supplies plentiful.  
Phenacetin.—5s. 9d. per lb.  
Phenazone.—7s.  
Phenolphthalein.—5s. 6d. to 6s. per lb. in cwt. lots.  
Potassium Bitartrate 99/100% (Cream of Tartar)—88s. per cwt. less 2½% for ton lots. Firm market. Prices have upward tendency.  
Potassium Citrate.—1s. 10d. to 2s. 2d. per lb. Dearer.  
Potassium Iodide.—16s. 8d. to 17s. 5d. per lb., according to quantity. Good steady demand.  
Potassium Metabisulphite.—7½d. per lb., 1-cwt. kegs included, f.o.r. London.

Potassium Permanganate.—B.P. crystals, 7½d. per lb., carriage paid; commercial, 8d. to 8½d. per lb., carriage paid. Forward prices higher.

Quinine Sulphate.—2s. 3d. to 2s. 4d. per oz., in 100 oz. tins. Good market.  
Resorcin.—5s. 6d. per lb.  
Saccharin.—63s. per lb. in 50-lb. lots.  
Salol.—3s. 6d. to 4s. per lb.  
Silver Proteinate.—9s. 6d. per lb.  
Sodium Benzoate, B.P.—2s. 9d. per lb. Ample supplies B.P. quality available.  
Sodium Citrate, B.P.C., 1923.—1s. 11d. to 2s. 2d. per lb., according to quantity.  
Sodium Hypophosphite, Photographic.—£13 to £15 per ton, according to quantity, d/d. consignee's station in 1-cwt. kegs.  
Sodium Metabisulphite Crystals.—37s. 6d. to 60s. per cwt., net cash, according to quantity.  
Sodium Nitroprusside.—16s. per lb. Less for quantity.  
Sodium Potassium Tartrate (Rochelle Salt).—75s. to 82s. 6d. per cwt., according to quantity. Market steady, good demand.  
Sodium Salicylate.—Powder, 2s. to 2s. 3d. per lb. Crystal, 2s. 2d. to 2s. 3d. per lb. Flake, 2s. 6d. per lb.  
Sodium Sulphide, pure recrystallised.—10d. to 1s. 2d. per lb., according to quantity.  
Sodium Sulphite, anhydrous, £27 10s. to £28 10s. per ton, according to quantity, 1 cwt. kegs included. In large casks £1 per ton less.  
Sulphonol.—15s. 6d. per lb. Little demand.  
Thymol.—17s. per lb. Slightly cheaper.

#### Perfumery Chemicals

Acetophenone.—12s. 6d. per lb.  
Aubepine.—15s. 3d. per lb. Advanced.  
Amyl Acetate.—2s. 6d. per lb. Cheaper.  
Amyl Butyrate.—6s. 9d. per lb.  
Amyl Salicylate.—3s. 3s. per lb. Dearer.  
Anethol (M.P. 21/22° C.).—4s. 6d. per lb.  
Benzyl Acetate from Chlorine-free Benzyl Alcohol.—2s. 9d. per lb.  
Benzyl Alcohol free from Chlorine.—2s. 9d. per lb.  
Benzaldehyde free from Chlorine.—3s. 6d. per lb.  
Benzyl Benzoate.—3s. 6d. per lb.  
Cinnamic Aldehyde Natural.—18s. 9d. per lb. Advanced.  
Coumarin.—19s. 6d. per lb. Cheaper.  
Citronellol.—17s. per lb. Again advanced.  
Citral.—8s. per lb. Cheaper.  
Ethyl Cinnamate.—12s. 6d. per lb. Cheaper.  
Ethyl Phthalate.—3s. 3d. per lb.  
Eugenol.—10s. per lb. Cheaper.  
Geraniol (Palmarosa).—33s. 6d. per lb.  
Geraniol.—11s. to 18s. 6d. per lb.  
Heliotropine.—6s. 9d. per lb. Cheaper.  
Iso Eugenol.—15s. 9d. per lb.  
Linalol ex Bois de Rose.—26s. per lb.  
Linalyl Acetate.—26s. per lb.  
Methyl Anthranilate.—9s. 6d. per lb.  
Methyl Benzoate.—5s. per lb.  
Musk Ambrette.—50s. per lb. Dearer.  
Musk Xylol.—13s. 6d. per lb. Again cheaper.  
Nerolin.—4s. 9d. per lb. Advanced.  
Phenyl Ethyl Acetate.—15s. per lb. Advanced.  
Phenyl Ethyl Alcohol.—16s. per lb.  
Rhodinol.—60s. per lb. Advanced.  
Safrol.—1s. 10d. per lb.  
Terpineol.—2s. 4d. per lb. Cheaper.  
Vanillin.—25s. per lb.

#### Essential Oils

Almond Oil, Foreign S.P.A.—15s. 6d. per lb.  
Anise Oil.—2s. 8d. per lb.  
Bergamot Oil.—16s. 6d. per lb.  
Bourbon Geranium Oil.—35s. per lb.  
Camphor Oil.—65s. per cwt.  
Cananga Oil, Java.—10s. per lb. Cheaper.  
Cinnamon Oil, Leaf.—6½d. per oz.  
Cassia Oil, 80/85%.—9s. 9d. per lb.  
Citronella Oil.—Java, 85/90%, 5s. 9d. per lb. Ceylon, 3s. 3d. per lb.  
Clove Oil.—7s. 6d. per lb. Cheaper.  
Eucalyptus Oil, 70/75%.—2s. 3d. per lb. Cheaper.  
Lavender Oil.—French 38/40% Esters, 28s. 6d. per lb.  
Lemon Oil.—3s. per lb.  
Lemongrass Oil.—4s. 6d. per lb.  
Orange Oil, Sweet.—11s. per lb.  
Otto of Rose Oil.—Bulgarian, 40s. per oz. Dearer. Anatolian, 18s. per oz.  
Palma Rosa Oil.—16s. 6d. per lb. Cheaper.  
Peppermint Oil.—Wayne County, 30s. per lb. Japanese, 18s. per lb. Market practically bare. English, 65s. per lb.  
Petitgrain Oil.—9s. 3d. per lb.  
Sandal Wood Oil.—Mysore, 26s. 7d. per lb. Australian, 18s. 6d. per lb.

## Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, October 16, 1924.

BUSINESS in the Heavy Chemical Market has shown some improvement during the past week, a fair amount of inquiry both for home and export having been received. Prices both for spot and forward delivery are firmer, particularly in the case of continental manufactured articles.

### Industrial Chemicals

ACID ACETIC.—Glacial 98/100%, £58 to £69 per ton; 80% pure, £45 to £47 per ton; 80% technical, £44 to £46 per ton. All packed in casks delivered c.i.f. U.K. ports, duty free.

ACID BORACIC.—Remains unchanged. Crystal or granulated, £45 per ton; powdered, £47 per ton, carriage paid U.K. stations minimum ton lots.

ACID CARBOLIC, ICE CRYSTALS.—Still in little demand. Quoted 6d. per lb. delivered.

ACID CITRIC, B.P. CRYSTALS.—Quoted 1s. 4d. per lb., less 5% ex store, but some spot parcels available below this figure.

ACID FORMIC 85%.—Spot material on offer at about £54 per ton ex store. Quoted £50 to £51 per ton c.i.f. U.K. ports, duty free.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy ex works.

ACID NITRIC 80%.—£23 10s. per ton ex station, full truck loads.

ACID OXALIC 98/100%.—Nominally 4d. per lb. ex store, spot delivery, but could probably be obtained for less. Offered from the continent at about 3½d. per lb. c.i.f. U.K. port.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Quoted 11½d. per lb. less 5%, ex store.

ALUMINA SULPHATE.—17/18% iron free quality quoted £7 per ton c.i.f. U.K. port. Spot lots on offer at about £7 17s. 6d. per ton ex store. 14/15% quality quoted £6 per ton c.i.f. U.K. port.

ALUM.—Ammonium chrome alum, £18 to £19 per ton, according to quality, f.o.b. U.K. port. Lump potash alum quoted £9 12s. 6d. per ton ex store, spot delivery. Slightly higher quotations from the continent, now on offer at £8 5s. per ton c.i.f. U.K. port.

AMMONIA ANHYDROUS.—Unchanged at about 1s. 6d. per lb. ex station. Containers extra and returnable, with possible slight reduction for large quantities.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks delivered U.K. port.

AMMONIA LIQUID 880°.—In steady demand. Unchanged at 2½d. to 3d. per lb. delivered, according to quantity, containers extra.

AMMONIA MURIATE.—Gray galvanizers' crystals of English manufacture unchanged at £30 per ton ex station. Offered from the continent at about £28 10s. per ton c.i.f. U.K. port. Fine white crystals quoted £24 5s. per ton c.i.f. U.K. port.

ARSENIC, WHITE POWDERED.—Spot material quoted £50 per ton ex store, but could probably be obtained slightly cheaper.

BARIUM CARBONATE.—98/100%, powdered, quoted £9 10s. per ton c.i.f. U.K. port, prompt shipment from the continent.

BARIUM CHLORIDE, 98/100%.—Spot material quoted £14 per ton ex store. Slightly cheaper quotations from the continent. Crystals quoted £11 15s. per ton c.i.f. U.K. port.

BARYTES.—English material unchanged at £5 5s. per ton ex works. Continental quoted £5 per ton c.i.f. U.K. port.

BLEACHING POWDER.—Spot lots £11 per ton ex station, contracts 20s. per ton less.

BORAX.—Granulated £24 10s. per ton; crystals, £25 per ton; powdered, £26 per ton, carriage paid U.K. stations, minimum ton lots.

CALCIUM CHLORIDE.—English material unchanged at £5 12s. 6d. per ton ex station. On offer from the continent at about £4 17s. 6d. per ton c.i.f. U.K. port.

COPPERAS, GREEN.—In moderate demand and price higher. Quoted £3 5s. per ton ex works, packed in casks, free.

COPPER SULPHATE.—Continental material quoted £23 per ton, ex wharf. English material for export about £24 10s. per ton f.o.b. U.K. port.

FORMALDEHYDE, 40%.—Quoted £51 per ton ex store, spot delivery.

GLAUBER SALTS.—English material unchanged at £4 per ton ex store or station. Fine white crystals on offer from the continent at about £3 per ton c.i.f. U.K. port. Large crystals 17s. 6d. per ton extra.

LAED, RED.—Imported material inclined to be higher at about £41 per ton ex store.

LEAD, WHITE.—Quoted £43 to £44 per ton ex store, spot delivery.

LEAD ACETATE.—White crystals offered from the continent at £42 10s. per ton c.i.f. U.K. port. Brown, £40 per ton c.i.f. U.K. port. White crystals quoted £45 5s. per ton ex store, spot delivery.

MAGNESITE, CALCINED.—Unchanged at about £7 17s. 6d. per ton ex station, prompt delivery. Hard burnt quality quoted £4 15s. per ton ex station. Finer quality of continental manufacture quoted £7 15s. per ton c.i.f. U.K. port.

MAGNESIUM CHLORIDE.—Quotations from the continent still higher. Now quoted £4 12s. 6d. per ton c.i.f. U.K. port. Spot material on offer at about £4 15s. per ton ex store.

POTASH, CAUSTIC, 98/92%.—Moderate inquiry and prices firm. Now quoted £30 per ton c.i.f. U.K. port. Spot lots on offer at about £31 per ton ex store.

POTASSIUM BICROMATE.—Unchanged at 5½d. per lb. delivered.

POTASSIUM CARBONATE, 96/98%.—Continental quotations advanced to about £22 15s. per ton c.i.f. U.K. ports. Spot lots quoted £24 17s. 6d. per ton ex store.

POTASSIUM CHLORATE.—Offered for prompt shipment from the continent at about 2½d. per lb. ex wharf, spot lots quoted 3d. per lb. ex store.

POTASSIUM NITRATE, SALTPETRE.—Quoted £26 per ton c.i.f. U.K. port, prompt shipment from the continent. Spot lots on offer at £28 15s. per ton ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 7d. per lb. ex wharf, prompt shipment from the continent. Spot lots available at about 8d. per lb. ex store.

POTASSIUM PRUSSIAN, YELLOW.—Moderate inquiry. Spot lots now quoted 7d. per lb. ex store.

SODA CAUSTIC.—76/77%, £19 7s. 6d. per ton; 70/72%, £17 17s. 6d. per ton; 60/62% broken, £19 2s. 6d. per ton; 98/99% powdered, £22 15s. per ton. All ex station spot delivery; contracts 20s. per ton less.

SODIUM ACETATE.—On offer from the continent at about £21 10s. per ton c.i.f. U.K. port. Spot lots available at about £22 15s. per ton ex store.

SODIUM BICARBONATE.—Refined recrystallised quality £10 10s. per ton ex quay or station; M.W. quality, 30s. per ton less.

SODIUM BICROMATE.—Unchanged at 4½d. per lb. delivered.

SODIUM CARBONATE, SODA CRYSTALS.—£5 to £5 5s. per ton, ex quay, or station; powdered or pea quality, £1 7s. 6d. per ton more. Alkali 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—English material unchanged at £10 per ton ex station, continental offers higher, now quoted £8 10s. per ton c.i.f. U.K. port. Spot lots available at about £9 10s. per ton ex store. Pea crystals of English manufacture unchanged at £13 15s. per ton ex station.

SODIUM NITRATE.—Ordinary quality quoted £13 7s. 6d. per ton ex store. 96/98% refined quality quoted 7s. 6d. per ton extra.

SODIUM NITRITE, 100%.—Unchanged at about £26 per ton, ex store.

SODIUM PRUSSIAN, YELLOW.—Spot lots unchanged at 4d. per lb. ex store.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton f.o.r. Good inquiry for export and price about £3 per ton.

SODIUM SULPHIDE.—60/65% solid, of English manufacture, £14 15s. per ton ex station; broken, £1 per ton more; flake, £2 per ton more. 60/62% solid of continental manufacture now quoted £12 17s. 6d. per ton c.i.f. U.K. port; broken, £1 per ton more; 31/34% crystals, of English manufacture, £9 2s. 6d. per ton ex station. 30/32% crystals, of continental manufacture quoted £8 15s. per ton c.i.f. U.K. port.

SULPHUR.—Flowers, £9 10s. per ton; Roll, £8 10s. per ton; Rock, £8 7s. 6d. per ton; Ground, £8 5s. per ton; ex store. Prices nominal.

ZINC CHLORIDE.—98/100% solid, offered from the continent at about £24 5s. per ton c.i.f. U.K. port. 96/98% quoted £23 10s. per ton c.i.f. U.K. port. English material for export about £26 per ton f.o.b. U.K. port.

ZINC SULPHATE.—Rather higher quotations from the continent, now quoted £11 10s. per ton c.i.f. U.K. port. Spot lots available at about £12 per ton ex store.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

### Coal Tar Intermediates and Wood Distillation Products

ALPHA NAPHTHOL.—Home inquiry. Price 2s. 3d. per lb. delivered.

BETA NAPHTHYLAMINE.—Good home and export inquiries. 4s. per lb., delivered.

DIMETHYLANILINE.—Some small inquiries. Price 2s. 3d. per lb. delivered.



G.SALT.—Export inquiry. Price 2s. 4d. per lb., 100% basis f.o.b.  
 GAMMA ACID.—Export inquiry. Price 10s. per lb., 100% basis f.o.b.  
 H ACID.—Some small home inquiries. Price 4s. 2d. per lb., 100% basis.  
 META PHENYLENE DIAMINE.—Some export inquiry. Price 3s. 10d. per lb. f.o.b. U.K. port.  
 NAPHTHIONIC ACID.—Small home inquiry. Price 2s. 3d. per lb., 100% basis, carriage paid.  
 NAPHTHIONATE OF SODA.—Good export inquiry. Price 2s. per lb., 100% basis, f.o.b.  
 NAPHTHOL TRI SULPHO ACID 1:3:6:8.—Some home inquiries. Price 3s. per lb., 100% basis, carriage paid.  
 PARA AMIDO ACETANILIDE.—Small home inquiry. Price 5s. per lb., 100% basis, carriage paid.

## The Manchester Chemical Market

[FROM OUR OWN CORRESPONDENT.]

Manchester, October 16, 1924.

THE demand for chemicals here continues on quietly steady lines and the general tone of the market keeps rather cheerful, although no great change in the position as compared with the last week or two can be reported. Buyers, as I pointed out in my last report, seem to be regaining some confidence, for slightly more interest in forward positions has been shown. Bookings for export have been rather light, with the Colonies as before taking the greater share of the business. Prices keep fairly steady on the whole and no very wide fluctuations either up or down have occurred.

### Heavy Chemicals

No improvement in the demand for saltcake and glauber salts has shown itself, and although quotations are about on the same level as at last report there is a rather weaker feeling about the market; in both cases prices are round £3 10s. per ton. Caustic soda continues to sell in fairly good quantities to home users and also for shipment; prices are firmly maintained at from £16 17s. 6d. per ton for 60 per cent. strength to £19 7s. 6d. for 76-77 per cent. Alkali is also moderately active for both branches of trade at about £6 15s. per ton. Hyposulphite of soda is not attracting much attention and is slightly cheaper; photographic crystals are offering at about £14 per ton and commercial quality at £9 5s. Bleaching powder keeps steady at £10 per ton and a fair amount of business is being put through. Bicarbonate of soda is still quoted at round £10 10s. per ton, but business continues on rather quiet lines. Sulphide of sodium is inactive with values unchanged for last week at £14 10s. per ton for 60-65 per cent. concentrated solid and £9 10s. per ton for crystals. Prussiate of soda is fairly steady again at 3½d. per lb. but the demand for this material is restricted. Acetate of soda meets with a moderate amount of inquiry and prices are well held at £22 to £23 per ton. Chlorate of soda is quiet but unchanged at 2½d. per lb. Phosphate of soda sells slowly at £13 to £13 10s. per ton. Bichromate of soda is maintained at 4½d. per lb., a fair amount of business being done. Soda crystals are still offering at £5 5s. per ton, but the demand is quiet.

Caustic potash is steady and is now quoted at £29 to £30 per ton for 90 per cent. material, the demand being fairly good. Carbonate of potash is in moderate request at round £23 per ton. Permanganate of potash is not arousing very much interest and values are on the easy side, ranging from 6d. to 7d. per lb. according to quality. Yellow prussiate of potash is quiet at 6½d. to 6¾d. per lb. Chlorate of potash meets with a fair demand and is still quoted at 2½d. per lb. Bichromate of potash is maintained at 5½d., a moderate volume of business being put through.

Arsenic appears to be still in the doldrums and little indication of recovery can be reported; prices have a weak tendency although quotably unchanged from last week at £45 to £46 per ton Manchester, for white powdered, Cornish makes. Sulphate of copper is slightly more active on export account and values are steady at £24 10s. to £25 per ton, f.o.b. Commercial Epsom salts keep steady at £4 15s. to £5 per ton; magnesium sulphate, B.P., is on offer at £6 10s. per ton. Nitrate of lead is in small demand at £42 per ton. Acetate of lead is maintained at £45 to £46 per ton for white and £43 for brown, sales being on moderate lines. Acetate of

lime is steady and in fair demand at £15 to £15 10s. per ton for grey and £11 for brown.

### Acids and Tar Products

Tartaric and citric acids still arouse only very restricted buying interest; quotations are easy though on last week's level of 1s. and 1s. 4d. per lb. respectively. Oxalic acid continues dull at round 4d. per lb. Acetic acid is steady and in fair demand at £43 to £44 per ton for 80 per cent. commercial quality and about £68 for glacial.

The coal-tar products are inactive in practically every instance. Pitch is very dull at £2 to £2 5s. per ton. Cresylic acid is easier at round 2s. per gallon. Solvent naphtha is quiet at 1s. 1½d. to 1s. 2d. per gallon. Carbolic acid crystals are still quoted at 6d. to 6½d. per lb. and crude at about 1s. 10d. per gallon, but little business is being done. Creosote oil is on offer at 5½d. to 5¾d. per gallon. Naphthalenes are quiet at £15 to £16 per ton for refined qualities and £5 and upwards for crude.

## Company News

THE INTERNATIONAL NICKEL Co.—A quarterly dividend of 1½ per cent. on the preferred stock has been declared, payable on November 1.

ROSARIO NITRATE Co., LTD.—The directors announce an interim dividend of 5 per cent., less tax, on account of the profits for the current year.

IDRIS HYDRAULIC TIN Co.—The directors have declared an interim dividend of 6d. per share, less tax, in respect of the profits to December 31, 1924, payable on October 21.

CANADIAN EXPLOSIVES Co.—A dividend of 1½ per cent. has been declared for the quarter ended September 30, 1924, on the 7 per cent. cumulative preference shares, payable on October 15.

TARMAC Co., LTD.—At a special meeting of the shareholders on Monday, it was resolved to increase the capital of the company to £700,000 by the creation of 200,000 5½ per cent. cumulative and tax free preference shares of £1 each.

FORSTERS GLASS Co.—After charging all expenses and providing for taxation, the accounts for the year ended March 31 show a profit of £13,883. Adjustments of taxation have converted the debit balance of £29,292 brought forward into a credit balance of £5,529, making with the profit above mentioned a total credit balance of £19,412. The directors propose to deal with this balance as follows: £8,247 written off cost of debenture issue; £5,000 for depreciation of plant and machinery; £6,165 carried forward.

SADLER AND Co.—The report for the year to June 30 last states that the profit, after charging income tax, interest on prepaid shares, and directors' and auditors' fees, and making provision for corporation profits tax, amounts to £31,036. The balance brought in was £7,550, together making £38,586. The directors have set aside for depreciation the sum of £15,000, and recommend a final dividend of 4 per cent., less income tax (making 7 per cent. for the year), leaving to be carried forward £14,415. The annual meeting will be held at the Royal Exchange, Middlesbrough on October 20, at 2.15 p.m.

EASTERN CHEMICAL Co.—For the year to March 31 last the report shows that the result of the year's working, after writing off cost of renewals and repairs on plant and buildings and further writing down stocks, was a loss of £5,856. In the balance-sheet leasehold buildings and plant and machinery are shown at original cost, viz. £99,647, and the difference between this figure and the book value, viz. £26,202, is shown on the debit side as depreciation reserve account. In view of the fact that the replacement value of the plant is considerably higher than the original cost, the directors do not consider it necessary to write off any further sum for depreciation this year. The annual meeting will be held at 13, Fenchurch Street Avenue, London, E.C., on October 21.

### Recent Will

Mr. Henry Roberts, J.P., of Kingsley, Hill Cliffe, Appleton, Cheshire, a director of J. Crosfield and Sors, Ltd., Warrington ..... £65,179

## Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

### County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

BARQUE OILS, LTD., 8, Bank Street, Gravesend, oil merchants. (C.C., 18/10/24.) £31 4s. 4d. September 17.

WALKER (J. KNOX) AND CO., LTD., 422, Kingsland Road, E., manufacturing chemists. (C.C., 18/10/24.) £25 18s. 5d. September 10.

WOODBROOK DRUG CO., Vale Place, Meridale Street, Wolverhampton, chemists. (C.C., 18/10/24.) £10 19s. 4d. August 2.

### Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an \*—followed by the date of the Summary, but such total may have been reduced.]

CUSSONS, SONS AND CO., LTD., Manchester, chemists, etc. (M., 18/10/24.) Registered October 3, £10,935 mortgage, to Bleachers' Association, Ltd., 4, Norfolk Street, Manchester; charged on Kersal Vale Works, Thatched Cottage, Myrtle Bank, and land adjoining, etc., at Kersal and Prestwich. \*Nil. January 10, 1924.

DISINFECTANTS AND GENERAL PRODUCTS, LTD., London, S.E. (M., 18/10/24.) Registered October 3, £500 debentures; general charge.

SOLOMIA (1922), LTD., Isleworth, insecticide manufacturers. (M., 18/10/24.) Registered October 3, £150 debentures; general charge. \*— December 31, 1923.

### London Gazette, &c.

#### Companies Winding Up Voluntarily

BUGLAWTON CHEMICAL CO., LTD. (C.W.U.V., 18/10/24.) R. E. Clark, Hanley, accountant, appointed liquidator, October 3.

ROSIN AND TURPENTINE IMPORT CO., LTD., (C.W.U.V., 18/10/24.) J. H. Gladstone, 3, Coleman Street, London, E.C., chartered accountant, appointed liquidator, October 10. Meeting of creditors, 4, London Wall Buildings, London Wall, London, on Monday, October 27, at 11.30 a.m. Creditors' claims by November 10.

#### Bankruptcy Information

HOWARTH, William, Bradley Fold, near Bolton, in the county of Lancaster, soap manufacturer. First meeting, October 22, 3.30 p.m., Official Receiver's Offices, Byrom Street, Manchester. Public examination, November 11, 10.45 a.m., Court House, Mawdsley Street, Bolton.

#### Partnership Dissolved

ELSON AND CO. (Harry George HERMON and Percy Charles ELSON), specialist dyers, Crompton Road, Macclesfield, by mutual consent, as from August 31, 1924. Debts received and paid by H. G. Hermon, carrying on business under the style of the Barracks Dye Works Co., at Crompton Road, Macclesfield.

### New Companies Registered

BRYTEENA SILK DYEING CO., LTD., 95, Mortimer Street, Oxford Circus, London. To carry on the business of dyeing and printing on silks, manufacturers, importers and exporters of and dealers in dyes, etc. Nominal capital, £1,000 in £1 shares.

ELECTROZONE CO., LTD., York House, Theobalds Road, London, W.C.1. Chemists, druggists, drysalter, chemical manufacturers, etc. Nominal capital, £2,000 in £10 shares.

GREGORY, REEVES AND CO., LTD., 7 and 8, Bury Court, St. Mary Axe, London, E.C. Merchants and importers and exporters of resin, turpentine, and other merchandise. Nominal capital, £25,000 in £1 shares.

HALL AND PICKLES, LTD., 64, Port Street, Manchester. Iron and steel merchants, manufacturers of chemicals, distillers, dye and gas makers, etc. Nominal capital, £260,000 in £1 shares (30,000 5 per cent. cumulative preference and 230,000 ordinary).

A. AND H. MELTZER, LTD. Leather merchants, manufacturing and analytical chemists, druggists, oil and colourmen, etc. Nominal capital, £10,000 in £1 shares. Solicitors: Parker and Hammond, Friars House, New Broad Street, London.

### Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

DRUGS, ANILINES, COLOURS, CHEMICALS.—A Barcelona agent desires representation of British manufacturers or exporters of drugs, anilines, colours, and chemicals. (Reference No. 414.)

CHEMICALS.—A Toronto agent desires representation of British manufacturers of industrial, photographic, and pharmaceutical chemicals. (Reference No. 403.)

SULPHATE OF COPPER.—An agent at Nantes is desirous of obtaining the representation of British firms for the sale in France of sulphate of copper. (Reference No. 389.)

VARNISH AND ENAMEL PAINTS.—A firm in Florence desires to secure the representation for the whole of Italy of British manufacturers of the above goods. Correspondence in French, English and Italian. (Reference No. 390.)

### Tariff Changes

AUSTRALIA.—Amendment of the conditions governing the British Preferential Tariff is to take effect as from April 1, 1925.

LITHUANIA.—Certain modifications in the Customs Tariff took effect on September 16. The duties on magnesium compounds, refined caustic soda and caustic potash (for technical purposes), refined iron sulphate, and other vitriols, crude or refined, condensed gases in metal containers, and certain other chemical and pharmaceutical products, dyes other than aniline dyes have been reduced. The duties on sodium carbonate and bi-carbonate and iodine preparations have been increased.

POLAND.—An Order provides for the prohibition of the importation into, or the exportation from, Poland of the following goods: Artificial sweetening substances with a greater sweetening power than cane sugar (sulphinid and salts thereof, saccharine, crystalline, sucramine, glucine, sucrol, sucrose, dulcine and the like, orthoamido-sulphobenzoic acid and the like, used in the manufacture of saccharine); crude oil.

### Serious Chemical Works Fire

SERIOUS damage was caused by fire at the chemical works of H. N. Morris and Co., Ltd., Trafford Park, Manchester, on Friday, October 10. At one time fears were entertained that three other works engaged in the manufacture of chemical products would be affected, but fortunately this danger was averted. The works in question, which are in the neighbourhood of Morris and Co.'s premises, are those of the British Alizarine Co., the English Textile Manufacturing Co., and W. H. Cowburn and Cowper, Ltd. The building, which was completely destroyed, was until recently devoted to the manufacture of coal-tar products—benzol, naphtha, and nitrobenzol—and at the time of the outbreak was being dismantled. The fire is believed to have been due to a spark whilst a tank was being broken up.



